

Getting Started using RESULT Software



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Introduction

This manual is a step-by-step tutorial that will get you started using Thermo Scientific's RESULT™ software package to operate your Antaris analyzer. RESULT is a powerful tool for setting up a custom analysis for production applications.

The tutorial covers...

- Starting the software.
- Learning about major software features.
- Creating, transferring and running workflows.
- Finding more information about the software.

Note Before you begin this tutorial, we strongly recommend that you complete the tutorial called “Your First Experiment” in your instrument’s *User’s Guide*. This tutorial assumes this level of knowledge in the most basic method of collecting a spectrum using your particular instrument. ▲

Once you are familiar with the basics, you can explore the more advanced features, documented in the *RESULT User’s Guide*. At the end of this manual is a “Where to go next” section with references to specific chapters and other manuals for topics you may wish to explore further.

Questions or concerns

In case of emergency, follow the procedures established by your facility. If you have questions or concerns about safety or need assistance with operation, repairs or replacement parts, you can contact our sales or service representative in your area or use the information at the beginning of this document to contact us.

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Getting Started

This chapter...

- Explains how to start RESULT Integration.
- Introduces you to the main features of the software interface.
- Shows you where the instrument model and directory paths are set.

In this tutorial you will use both RESULT Integration and RESULT Operation software. RESULT Integration is the development tool you use to create analyses. RESULT Operation is the production application used to analyze samples with the workflows developed in RESULT Integration.

Starting RESULT Integration

Before starting RESULT Integration, you must log on to the computer workstation. Before doing this, you must receive a Windows user name and password from your Windows administrator. If you are not a RESULT administrator, the RESULT software administrator must also add your logon information to the RESULT user list.

Note If Thermo Scientific Security Administration software is installed, you must be granted access to run RESULT Integration. See the documentation that came with the software for more information. ▲

To start RESULT Integration, double-click its shortcut on the desktop:

You can also click the Start button on the Windows taskbar, point to Programs, point to Thermo (or Thermo Nicolet), and choose RESULT Integration.



Depending on the software configuration, a prompt may ask for your password:

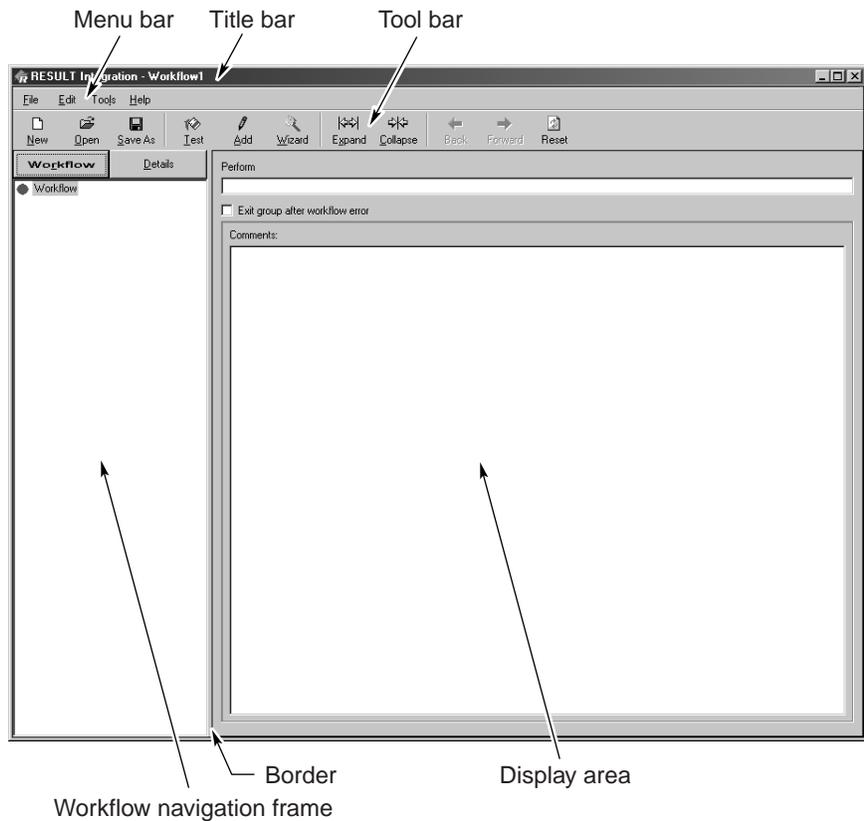
The password you enter must match your Windows password exactly, including the letter case.



Enter your Windows password and choose OK.

When the software starts, the RESULT Integration main window appears:

You can change the sizes of the workflow navigation frame and display area by dragging their common border.



RESULT Integration main window

The next sections describe some main parts of the window and other important software features.

Toolbar

The toolbar near the top of the RESULT Integration window provides a convenient way to initiate frequently used menu commands and other functions.



You can use the toolbar to perform the following operations with the open workflow:



Use the New tool to create a new workflow.



The Open tool lets you open an existing workflow.



Use Save As to save the open workflow.



The Test tool runs the open workflow so you can see how it will operate on a production system. The test feature of RESULT Integration mimics RESULT Operation, which is the production application for RESULT.



Use the Add tool to add software commands, called “events,” and parameter groups, called “specifications,” to the open workflow.



Use the Wizard tool to start the Workflow wizard. The wizard is a handy tool for quickly creating a functional workflow.



Use the Expand tool to expand the workflow displayed in the workflow navigation frame to reveal all the items the workflow contains.



The Collapse tool collapses the displayed workflow or specification tree so that only the first level structures are visible.



Use the Back and Forward tools to navigate between screens in the open workflow.



After editing the setting for a displayed parameter, you can use the Reset tool to restore the parameter to the previous setting.

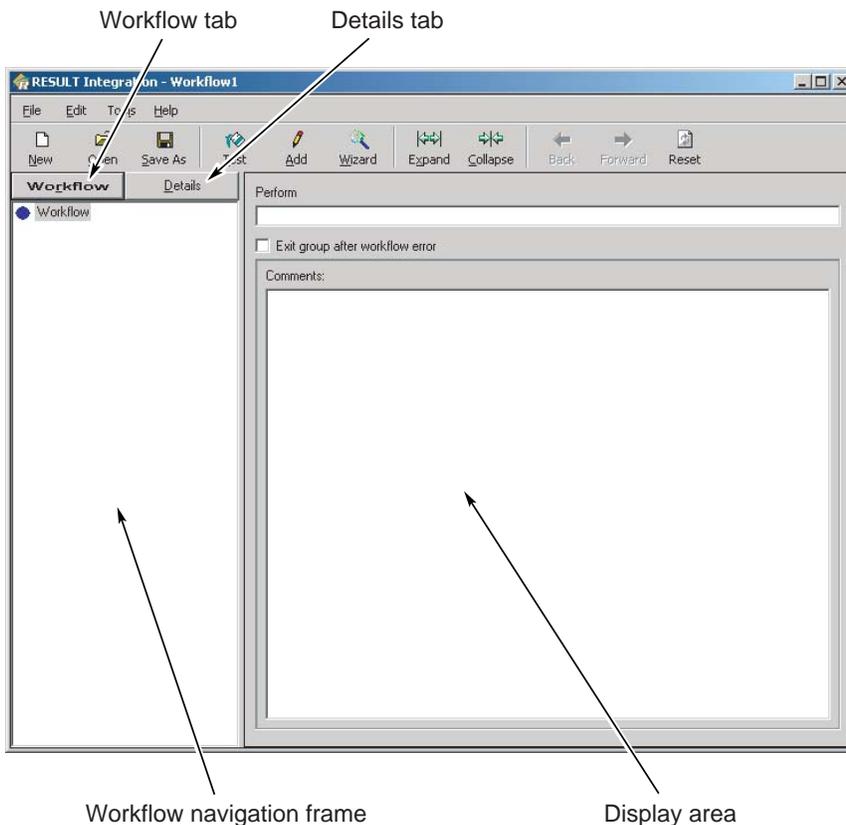
To use a feature on the toolbar, use the mouse to click the icon or hold down the ALT key on the keyboard while typing the underlined letter in the name that appears below the icon.

Workflow navigation frame and display area

Use the workflow navigation frame to create a workflow, add items to the open workflow, or simply display the contents of the workflow. If the workflow tree is displayed in the workflow navigation frame, the display area shows the general options for the selected event. This is discussed in more detail in the next chapter.

The Workflow tab in the workflow navigation frame shows the events that have been added to the open workflow.

You can click the Details tab to access all of the specifications for the workflow.



Checking the directory paths and instrument model

Before we begin creating a workflow, we will view the options for defining the directory paths used to store files and the parameter that specifies the instrument model in RESULT Integration. Choose Options from the Edit menu to display the Options dialog box. Here is an example:

Spectra And Reports specifies the path for saving spectra and report files.

Workflows And Methods specifies the path for locating and saving workflows and their associated method files.

The Model parameter specifies the instrument model. This setting is very important, as it determines the software options available for collecting data.

Instrument Has ValPro Option Installed specifies whether ValPro software is installed for validating the system.

Do not change any of the settings. Choose OK when you are ready to continue.

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About Workflows

Workflows are the underlying concept behind RESULT. The files that you create or open in RESULT Integration, the development tool for creating your analysis, are workflow (*.wfl) files.

A workflow is a series of tasks that control the collecting, measuring, processing, reporting, and archiving spectral data using your analyzer. Each workflow may contain one or more software commands for collecting, measuring, processing, reporting, or archiving spectral data. Based on the overall task the workflow is to perform, you decide which commands you want to include and arrange them as you wish. Once the workflow has been completed, tested and saved, you can transfer it to a production system.

Before reading the next sections, you may wish to open one of the provided example workflows so that you can see the discussed features in your software. To open a workflow, choose the Open button on the toolbar, select a workflow file (with the extension .wfl) and choose Open. If you make any changes to the opened workflow, do not save the changes.

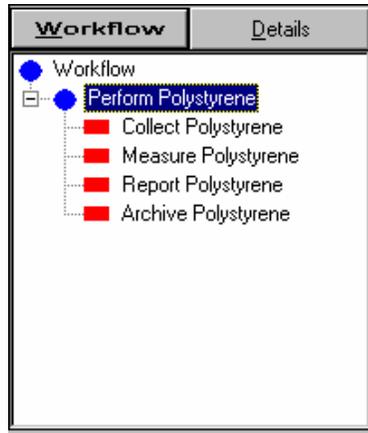
Workflow tree

The workflow navigation frame is your palette for creating and editing a workflow. We call the commands that make up a workflow “events,” because they specify a task that will be carried out only when the workflow is run. You may add and delete events and arrange them in any order. The events may be linear or grouped. Grouped events can be used to organize the workflow or to provide conditional or repetitive steps in the workflow.

The available events range from simple tasks to collect, measure, report and archive data to application-specific tasks, such as running an autosampler. Special events are also provided to perform maintenance tasks such as clearing unneeded data from the computer’s internal memory, loading a spectrum from a computer disk, sending data to a server or text file, or running an executable program. Structural events let you add loops and conditional paths to a workflow.

As you build a workflow, we call the basic structure a workflow tree because it looks and operates similar to a computer directory tree. To display or hide the events within a group, click the plus (+) or minus (-) sign to the left of the group name or double-click the group symbol (●). In the example below, the events in the group named “Polystyrene” were displayed by clicking the plus sign to the left of the group name.

After you click a plus sign, it changes to a minus sign. Click it to hide the events in the group.



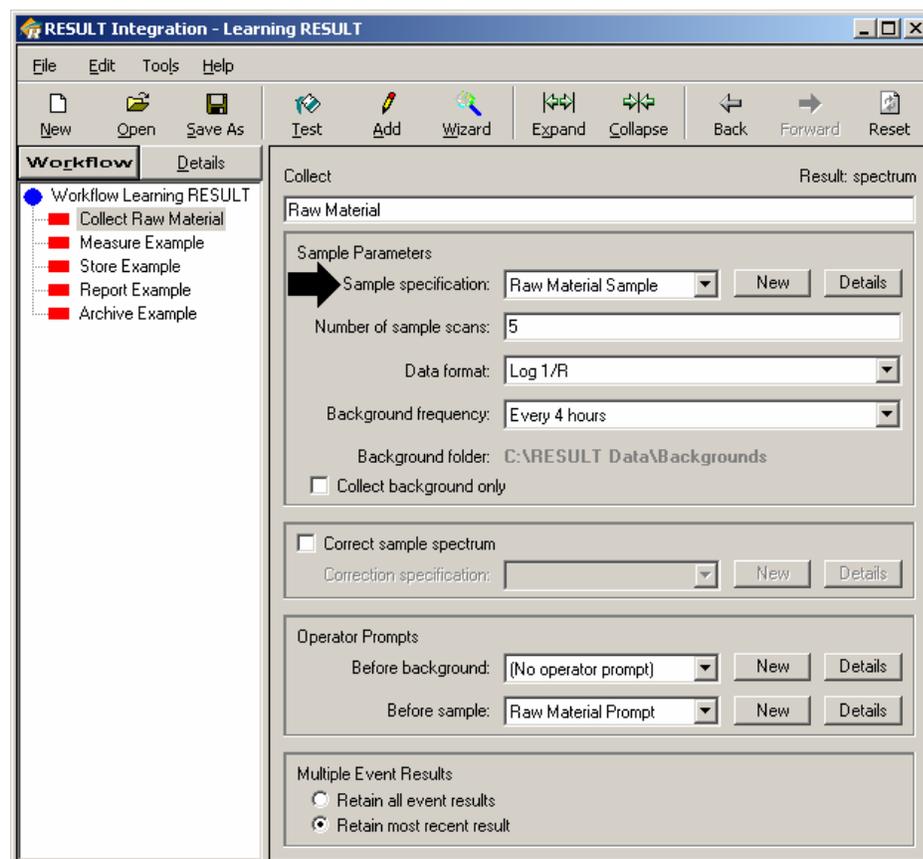
To quickly expand the entire workflow to show all of the events within every group, choose the Expand tool on the toolbar.

Workflow events

Each workflow event has an associated set of general options. To see the options for a workflow event, select the event in the workflow navigation frame. The event name is highlighted in the workflow tree, and the general options for that event appear in the display area. Here is an example:

Most events have one or more associated specifications. These contain options that define how to perform the event. The Collect event, for example, has a sample specification (see the bold arrow) that defines sample collection for a given sample type or material.

A Collect event may have other specifications, such as one for an operator prompt. The prompt specification includes the prompt text and defines the button name and action for the operator's response.



Options for a selected event

To see a particular specification in the selected event, choose the Details button to the right of the specification name. Here is an example showing a sample specification in the display area:

The screenshot shows a 'Sample Specification' dialog box with the following sections and controls:

- Sample Specification:** A text field containing 'Raw Material Sample'.
- Sample Collection:**
 - Sampling technique: Integrating Sphere
 - Sample Cup Spinner: None (dropdown)
 - Background specification: Raw Material Background (dropdown) with 'New' and 'Details' buttons.
 - Pre-collection delay (sec): 0 (text field) and Attenuator: Empty (dropdown).
 - Resolution: 16.0 cm-1 (dropdown)
 - Gain: 1x (dropdown) with an 'Optimize Gain' button.
- Spectral Range:**
 - Use standard range in cm-1
 - Start: 4,000.00 (text field)
 - End: 10,000.00 (text field)
- Samples for Simulation:**
 - citric-1 (dropdown) with 'New' and 'Delete' buttons.
 - Prompt for simulation sample
 - Use simulation sample for all workflow runs
 - Cycle through simulation samples

To return to the previous screen, select an event in the workflow tree or click the Back button on the toolbar.

You can use the workflow tree to view the general options or an associated specification for any event in the current workflow.

In the next chapter you will modify a provided workflow using some of the techniques discussed above.

Creating a Workflow

This chapter describes how to create a basic workflow that will:

- Collect a near-infrared spectrum
- Report the measurement result, and
- Archive the spectrum and the report.

Once the workflow is created, you will learn how to test the workflow by running it in a simulated production mode.

When you run the workflow later in RESULT Operation, you will collect actual sample data using your analyzer. You will need an appropriate sample for this. The table below lists some suitable samples for different sampling modules.

Sampling Module	Samples
Transmission module	Liquid at room temperature; for example, toluene.
Integrating sphere	Solid or powder at room temperature; for example, “sticky note” made of any color paper except black.
Fiber optic	For SabIR probe, use solid with rough surface; cloth; paper. For other fiber optic probes, see the manufacturer’s manual for compatible samples.

Note You can also use the Workflow wizard to automatically create a workflow containing basic events (collect, measure, report, archive). See “Using the wizard to create or add to a workflow” in “Chapter 2 Creating and Editing Workflows” in “Section 2 RESULT Integration Software” in your *RESULT User’s Guide* for more information. ▲

Building the workflow

Follow these steps to build your first workflow:

1. To start a new workflow, choose the **New** button on the toolbar.

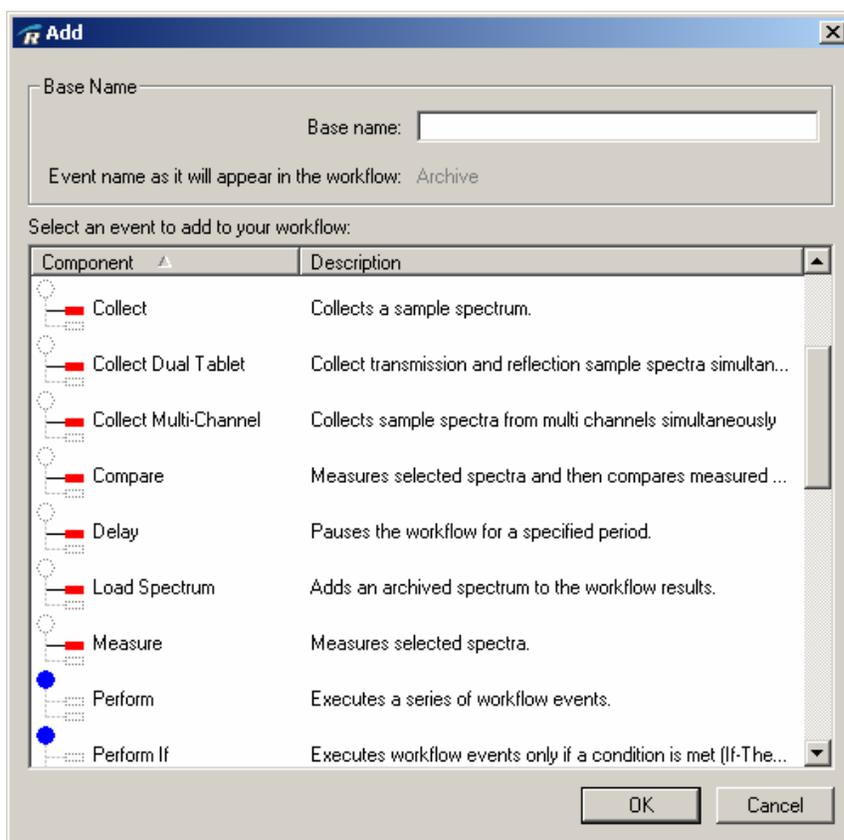


If you are asked whether to save the current workflow, choose No.

2. To add a collect event, choose the **Add** button on the toolbar.



The Add dialog box appears. Here is an example showing different types of events scrolled into view:



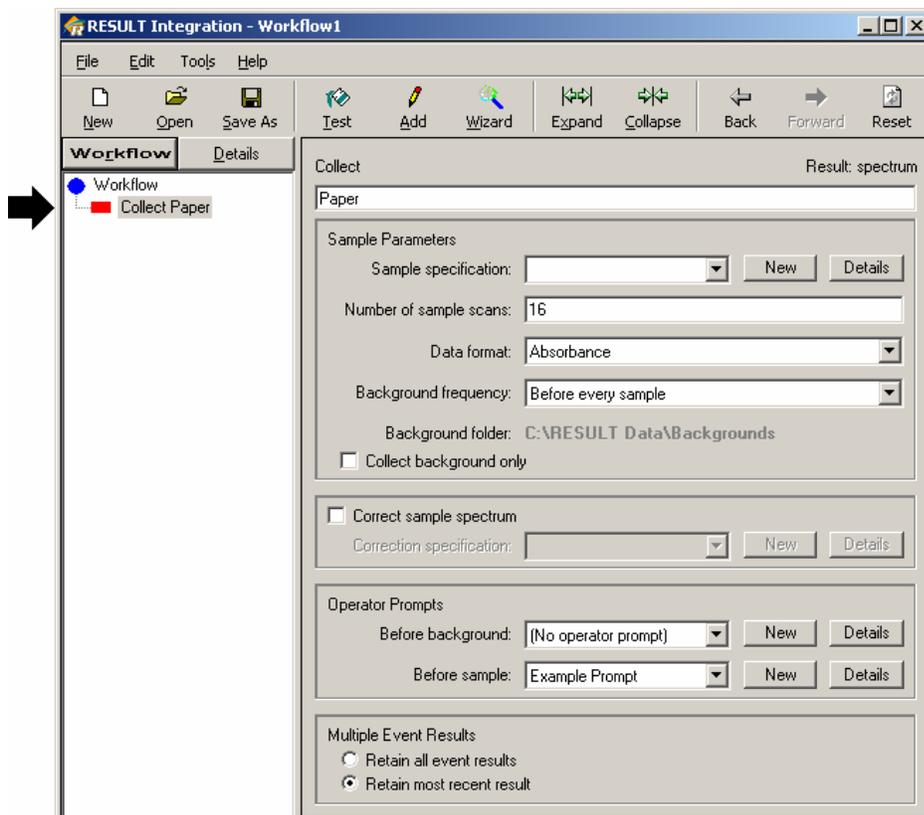
Events are named with action words, such as “collect” and “delay.” The Description column explains the task the event will perform. You can use a Collect event to collect a spectrum using any of the sampling modules available on your analyzer.

Simple events, which carry out a specific task, are marked with a red rectangle. Structural events are marked with a blue circle. They let you group events to control how they will be implemented.

3. Type “Paper” (or other suitable name) in the Base Name text box, select Collect in the list of events, and then choose OK.

The added event appears in the workflow navigation frame:

When you add an event, it is placed just below the selected event in the open workflow or at the end of an event group, as in our example.

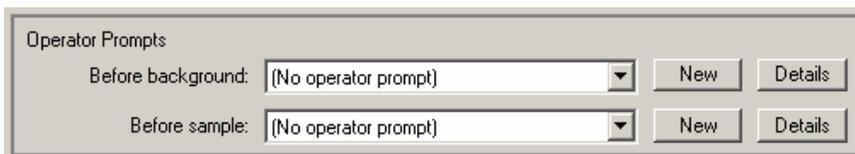


Parameters for the event appear in the display area. Some of the basic parameters are briefly described below.

- **Number Of Sample Scans.** This parameter sets the number of interferometer scans for collecting sample spectra.
- **Data Format.** This defines the Y-axis unit for the sample spectrum in a sample report.
- **Background Frequency.** This parameter determines how often a background spectrum is collected. If you collect samples only periodically, collecting a background before every sample is recommended. If you collect many samples at a time, collecting a background every hour should be sufficient.
- **Collect Background Only.** When this option is selected, the software collects only background data (not sample data).

- **Operator Prompts.** RESULT can display prompts that tell the operator to prepare for background or sample data collection. When you create a prompt, you enter its text, give it a name, and enter other information. We will create a sample-collection prompt in the next step.
- **Sample Specification.** This parameter defines the sample collection parameters for a given sample type or material using a specific sampling module on the instrument. (The table near the beginning of this chapter suggests suitable samples for the different modules.) We will create a sample specification for your sample and sampling module later in this tutorial.
- **Multiple Event Results.** If a repeat or perform-while loop includes a collect event, it produces one spectrum from each loop iteration. The Multiple Event Results options let you specify whether the workflow will store all of the spectra produced by the loop so they are available for use in subsequent workflow events (Retain All Event Results), or only the most recent spectrum (Retain Most Recent Result). Retain all the spectra if you want to add them to the sample report. Retain only the most recent spectrum if you need to produce an average or variance spectrum for a measure event, want all the spectra archived with the same date and time, or want to create a spectral plot that includes all the spectra.

4. To add a sample-collection prompt, click the New button to the right of Before Sample in the Operator Prompts group.



The prompt specification appears in the display area:

Prompt Specification

Paper Prompt

Button label: Continue

Allow Antaris Acknowledge button response

Preview data collection

Prompt text:

5. Type **“Press Acknowledge or select Continue to collect sample data.”** in the Prompt Text box and then click the Back button.

The name of the added prompt, “Paper Prompt,” appears in the Operator Prompts group:

Operator Prompts

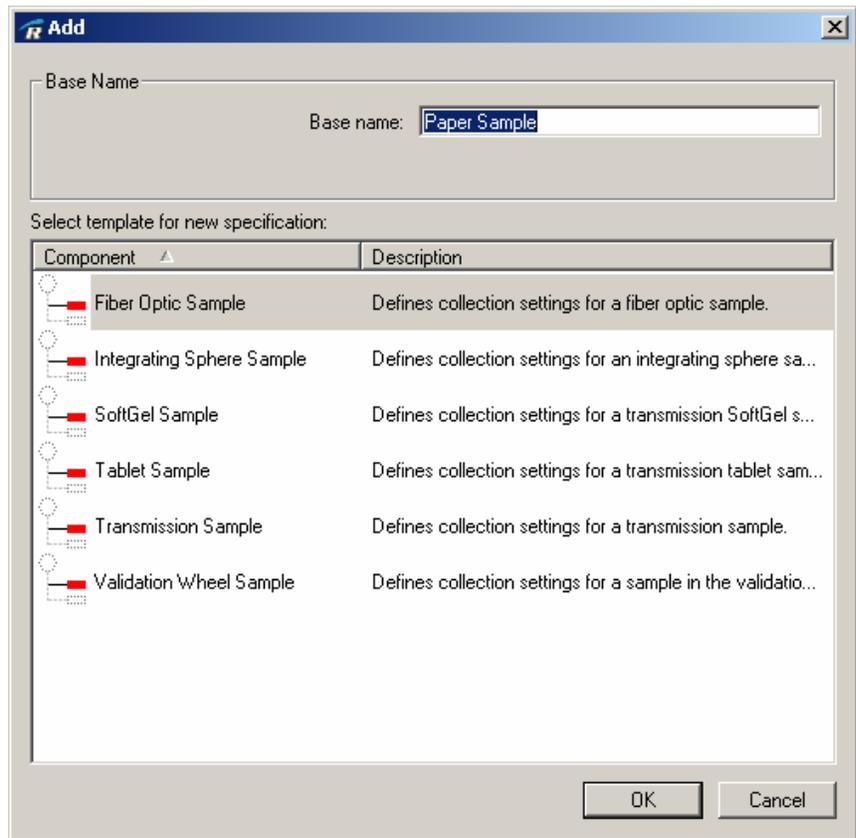
Before background: (No operator prompt) [New] [Details]

Before sample: Paper Prompt [New] [Details]

6. To add a sample specification, click the New button to the right of Sample Specification.

Sample specification: [] [New] [Details]

The Add dialog box appears. Here is an example:



The listed specifications vary depending on your system hardware. (The table near the beginning of this chapter lists some available sampling modules.)

7. Select an appropriate specification type and choose OK.

Base your selection on the hardware and sample you are using. Select one of the available sampling modules listed in the table below.

Sampling Module	Samples
Transmission module	Liquid at room temperature; for example, toluene.
Integrating sphere	Solid or powder at room temperature; for example, "sticky note" made of any color paper except black.
Fiber optic	For SabIR probe, use solid with rough surface; cloth; paper. For other fiber optic probes, see the manufacturer's manual for compatible samples.

The sample specification information appears:

Notice that the Sampling Technique readout reflects your selection in the preceding step; in this example, Integrating Sphere Sample (the specification that is appropriate for the integrating sphere sampling module).

Some of the specification features are briefly described below. For this tutorial we will use the default settings for the sample specification parameters.

- **Sample Position.** This parameter specifies the location for sample data collection. Use the appropriate setting in the table below.

Sampling Module	Sample Position Setting
Integrating sphere	The Sample Position parameter is not available for this module (as in the example above), since the sample can be in only one location.
Transmission module	Front Sample Compartment or Rear Sample Compartment, depending on which location in the transmission sample holder you plan to use.
Fiber optic probe	The Sample Position parameter is not available for this module, since the sample location is always external to the analyzer.

- **Probe Type.** This parameter is available only for Fiber Optic Probe sample specifications. If you are using a SabIR probe, set Probe Type to Antaris SabIR. If you are using another probe, set Probe Type to Third Party.
- **Resolution.** This parameter specifies the resolution of the collected spectrum. Resolution is a measure of how well closely spaced peaks in a spectrum are differentiated. The higher the resolution, the better closely spaced peaks can be differentiated.

Note A higher resolution is expressed by a lower numerical value. For example, a spectrum with 4 cm⁻¹ resolution has higher resolution than a spectrum with 8 cm⁻¹ resolution. ▲

- **Optimize Gain.** This button lets you automatically set the gain and attenuation. Gain determines how much the detector signal is amplified electronically, making it larger relative to the level of electronic noise. Amplifying the signal is helpful when the signal is weak. Attenuation is used to prevent the highly sensitive detectors from becoming saturated or producing a distorted signal due to excessive light reaching their elements. Optimize Gain determines which energy-limiting screen of the attenuation wheel (if present) to place in the beam to reduce the light energy.
- **Samples For Simulation.** You can use these options to collect or specify sample spectra to use for simulated runs of the workflow. You can also configure the workflow to always run with simulated sample data.

8. To add a background specification, click the New button to the right of Background Specification.



The background specification information appears:

The software automatically selects a background specification that matches the current sample specification.

Each sample specification requires an associated background specification, which defines background collection for the current sampling module and technique. Some of the specification features are briefly described below.

- **Position.** Set this to the location where you will collect background data. (Also see the description of Use Sample Position, Gain And Attenuation Settings below.) Use the appropriate setting in the table below.

Sampling Module	Position Setting
Integrating sphere	The Position parameter is not available for this module, since the background can be collected at only one location.
Transmission module	Background Position (uses the center opening in the transmission sample holder)
Fiber optic probe	Fiber Optic Probe

- **Use Sample Position, Gain And Attenuation Settings.** When this option is selected, background spectra are collected using the same beam path as the sample spectra and with the same Gain and Attenuator settings. When this option is cleared (the default setting), an internal background reference material is used. The table below shows the background location for different sampling modules when this option is cleared.

Sampling Module	Background Location When Option Is Cleared
Transmission module	Center opening in the holder.
Integrating sphere	Internal gold reference.
Fiber optic	Internal Spectralon® reference.
Multiplexer, MX, EX	Internal reference.

Make sure this option is cleared for this tutorial.

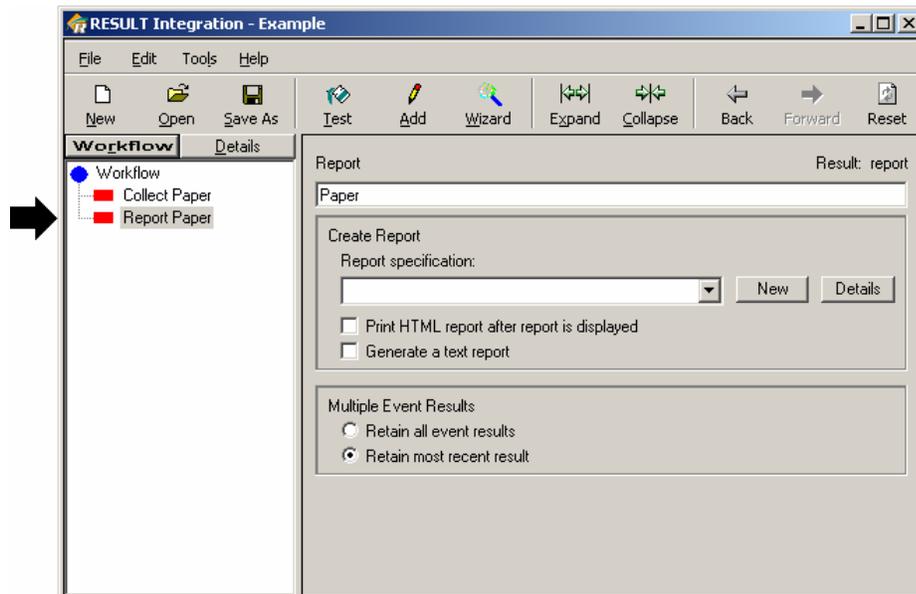
- **Backgrounds For Simulation.** You can use these options to collect or specify background spectra to use for simulated runs of the workflow. You can also configure the workflow to always run with simulated background data.

9. Add a Report event to the workflow.

A Report event instructs the workflow to create a sample report containing items such as operator name, spectra, and workflow results. You define the title and contents of the report, plus the format of the included information.

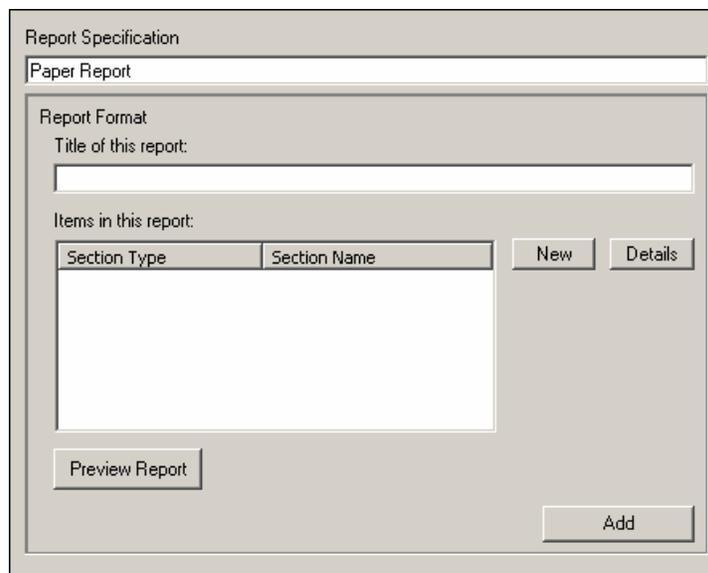
To add the event, choose the Add button on the toolbar. In the Add dialog box, type “Paper” (or other suitable name) in the Base Name text box, select Report in the list of events, and then choose OK.

The added event appears in the workflow navigation frame:



To create the report specification, click the New button to the right of the Report Specification parameter. Report specification parameters appear in the display area:

A report specification defines the sections in a report and their order when the report is displayed or printed. We are going to include three sections: a Heading section, a Table section and a Spectrum section.

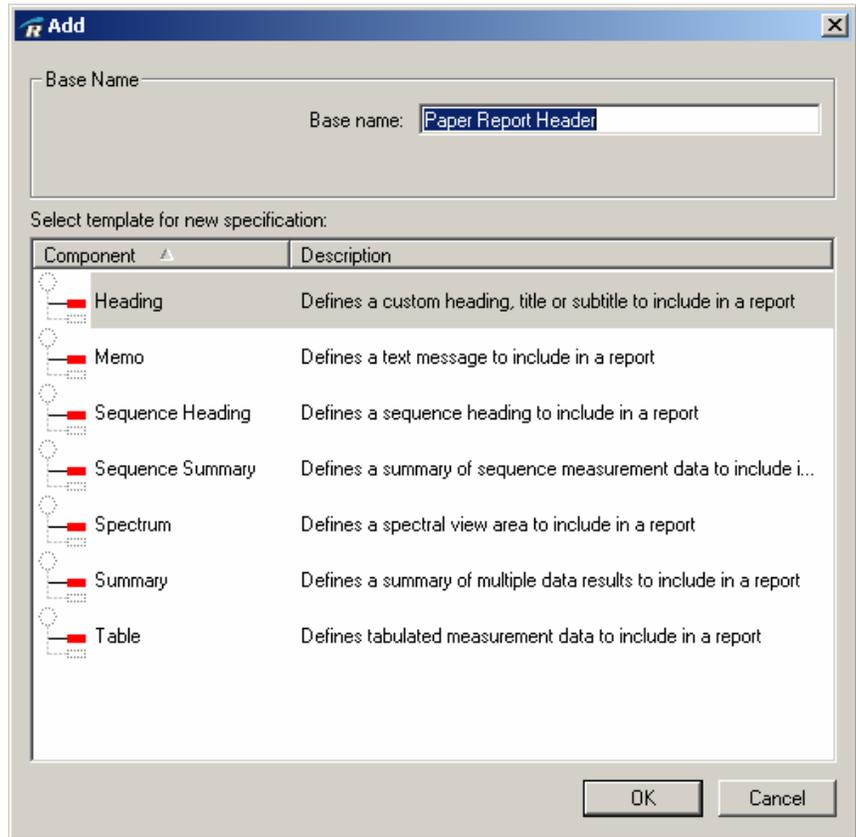


Type the title “Paper Report” (or other suitable title) in the Title Of This Report text box.

10. Add a Heading section.

To do this, click the New button to the right of the table of sections. The Add dialog box appears listing the various sections that can be included in a report:

A Heading section is a handy way to add important details to the report. For example, you can add information about the operator such as the logon name, the date and time the report was generated, or information about the instrument such as the serial number, the current status, or the date of the previous validation.



Select Heading in the list and choose OK. The Heading Format section appears:

Heading Item Specification

Paper Report Header

Heading Format

Title:

Border:

Items in this heading:

Label	Information to Print

11. Format the Heading section to specify the headings to include and the title of the section.

- a. Add headings to this section by clicking the Add button in the lower-right corner of the display area. The Add/Edit Header Item dialog box appears:

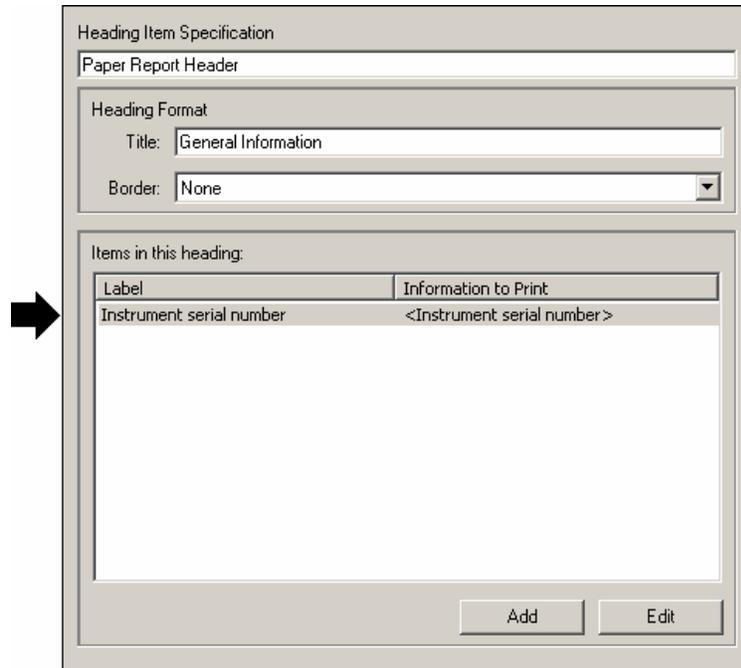
Add/Edit Header Item

Enter label for header item:

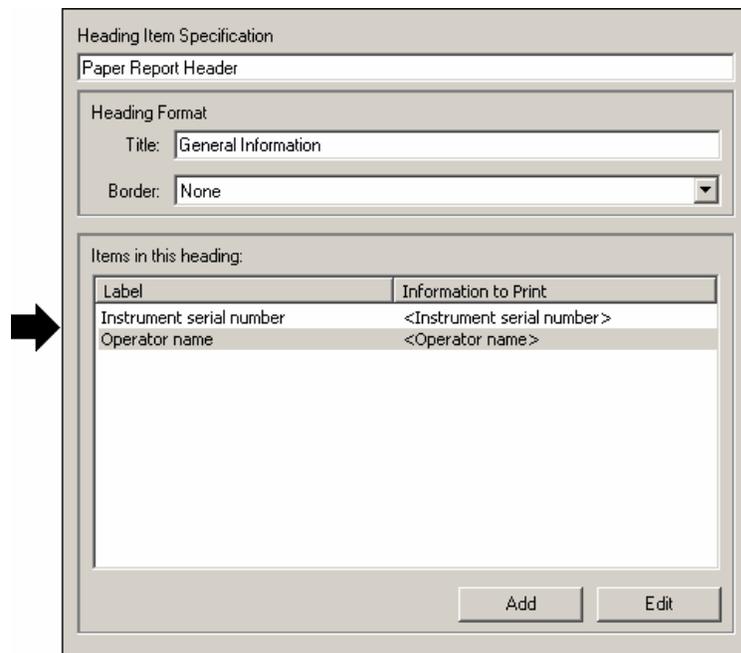
Select data type:

Enter text string:

Set Select Data Type to <Instrument Serial Number>, type “Instrument serial number” in the Enter Label For Header Item text box, and choose OK. The new heading appears in the table:



Use the same techniques to add a heading for <Operator Name>. Use “Operator name” when you enter the label text. When you are finished adding headings, they should be listed like this:



Other commonly used headings are:

<Current Date/Time>. This places the current date and time in the report.

<Custom Image, Left Justified>,
<Custom Image, Centered> and
<Custom Image, Right Justified>.

These let you add a company logo or other graphic to the report.

b. Type the title “General Information” in the Title text box.

12. Add a Table section.

A Table section lets you organize and add data to the report. The data can be from a measure event such as the concentration of a measured component, or from the spectrum itself such as the number of scans collected from the sample or the resolution of the collected data.

To add the section, choose the Back button on the toolbar, and then use the New button to the right of the table of sections. Use the default base name in the Add dialog box. After you add the section, the Table Format section appears:

Table Item Specification

Paper Report Table

Table Format

Title:

Layout: Display data types in rows, attributes in columns

Border: None

Show column headers Show row headers

Show event names with attribute names Place all data types in one row/column

Report these events:

Event Name	Data Type	Attribute	Label	Decimal...	Align	Style	Color

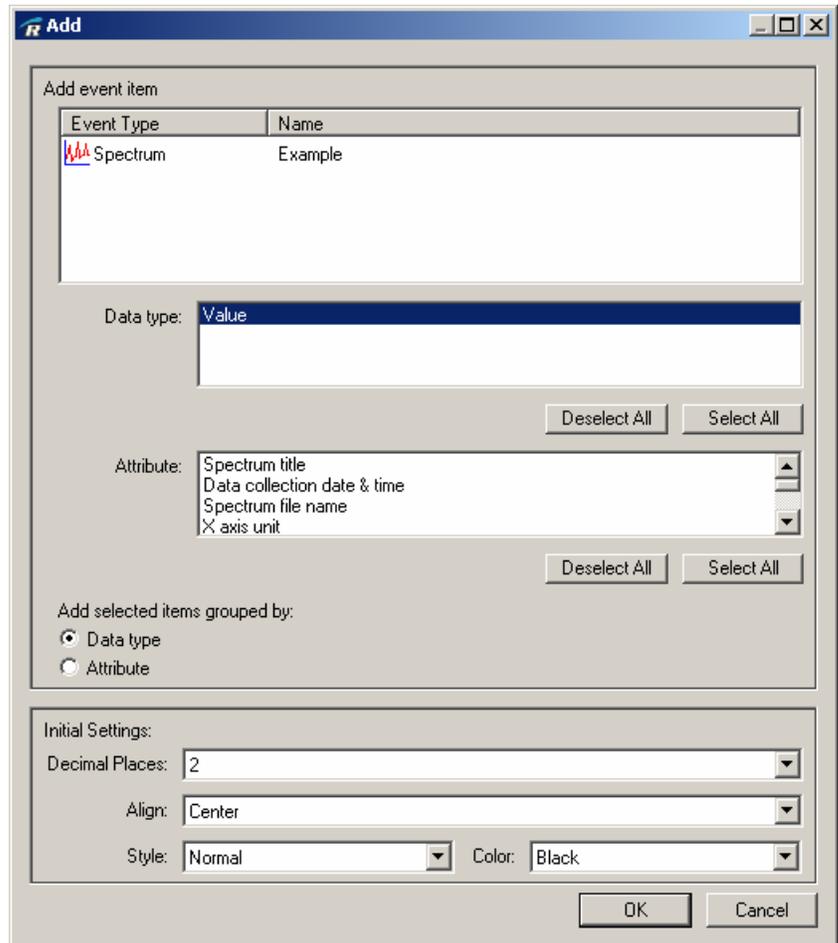
Preview Section Add Break Add Item

13. Format the Table section to include the desired collection information for the collected spectra and to specify how to display the information.

- a. Click the Add Item button. The Add dialog box appears:

The Spectrum event item represents the spectrum that will be collected by the Collect event you added earlier. If you had also added a Measure event, a Measurement event item would be listed as well.

The listed attributes represent collection information that is stored with spectra collected by the workflow.



Select Data Collection Date & Time and Resolution in the Attribute list. (To select multiple items, hold down the Ctrl key on the keyboard while you click the items in the list.) Choose OK. The table now contains two types of data:

Other commonly included items are Spectrum Title, Spectrum File Name, and Number Of Scans



Table Item Specification

Paper Report Table

Table Format

Title:

Layout: Display data types in rows, attributes in columns

Border: None

Show column headers Show row headers

Show event names with attribute names Place all data types in one row/column

Report these events:

Event Name	Data Type	Attribute	Label	Decimal...	Align	Style	Color
Example	Value	Data collection date ...	Data collection...	2	Center	Normal	Black
Example	Value	Resolution	Resolution	2	Center	Normal	Black

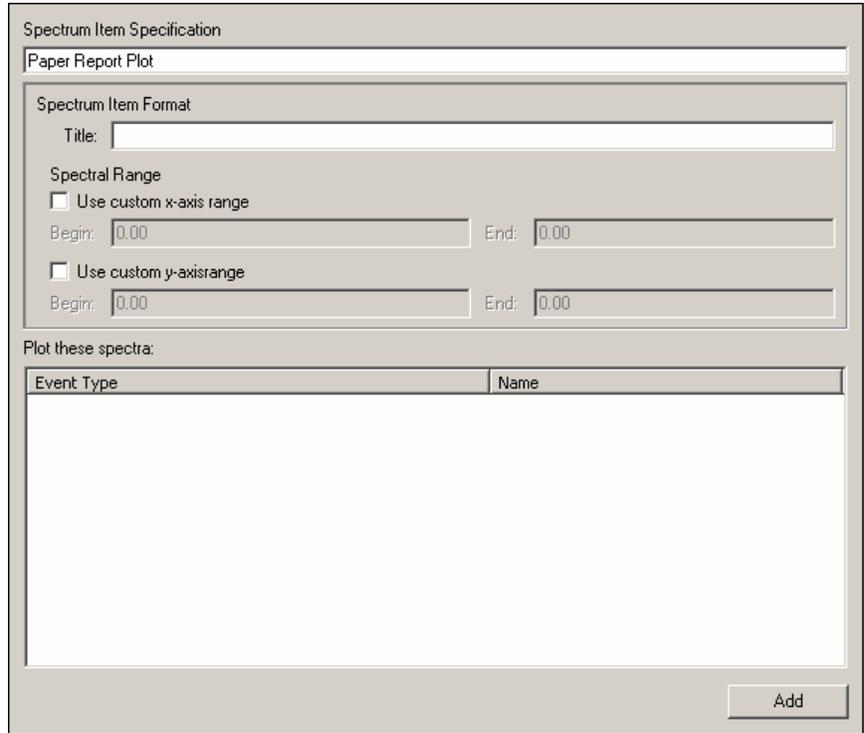
Preview Section Add Break Add Item

- b. Type the title “Table of Collection Information” in the Title text box.
- c. Set Border to Thin.
- d. Clear the Show Event Names With Attribute Names and Show Row Headers check boxes, and select Place All Data Types In One Row/Column.

14. Add a Spectrum section.

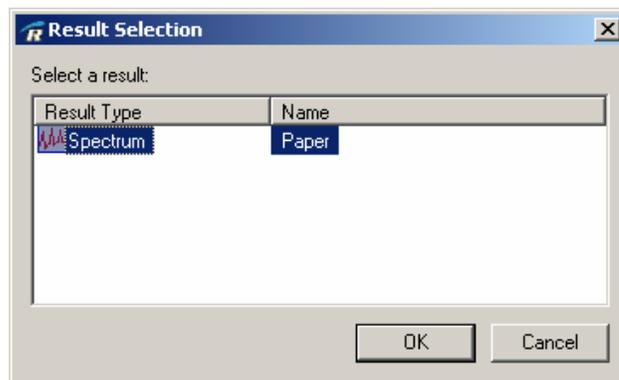
A Spectrum section lets you add an image of the sample spectrum to the report and to define the limits for the X-axis and Y-axis.

To add the section, click the Back button in the toolbar, and then use the New button to the right of the table of sections. Use the default base name in the Add dialog box. After you add the section, the Spectrum Item Format section appears:

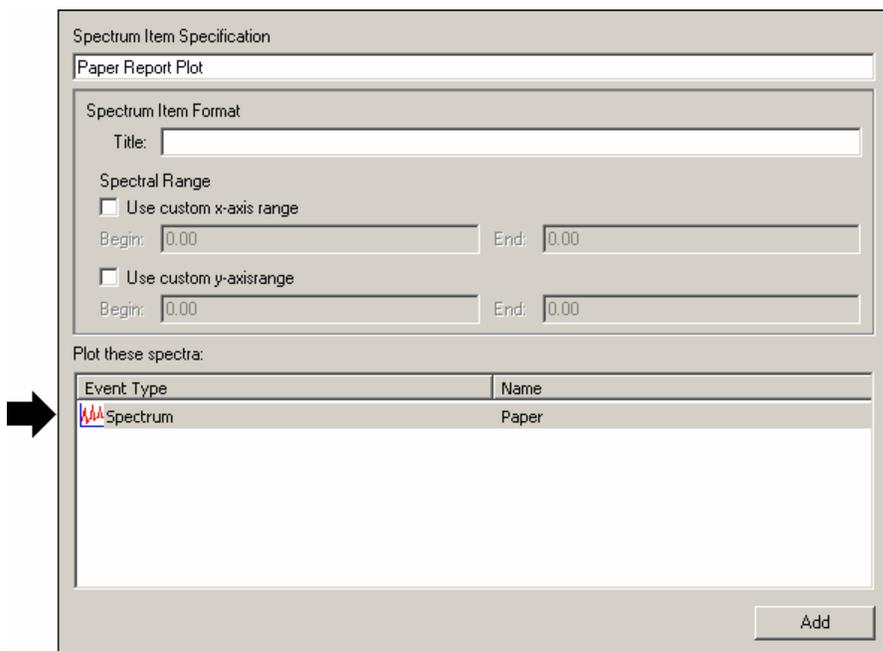


15. Format the Spectrum section to specify the spectrum to include and its title.

- a. Click the Add button in the lower-right corner of the display area. The Result Selection dialog box appears listing the spectrum that will be collected by the collect event:



Choose OK. The added spectrum is listed in the specification:



b. Type the title “Example Spectrum” in the Title text box.

16. Click the Back button to return to the report specification.

The specification now includes three items:

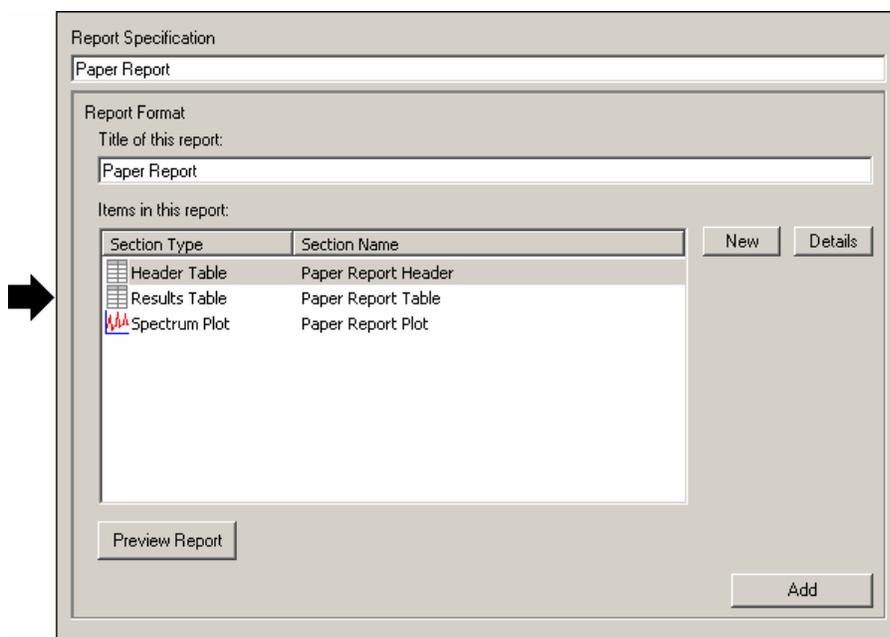
Other report items that can be added are:

Memo. This defines a text message.

Sequence Heading. This summarizes sequence collection information such as sequence title and file names of spectra.

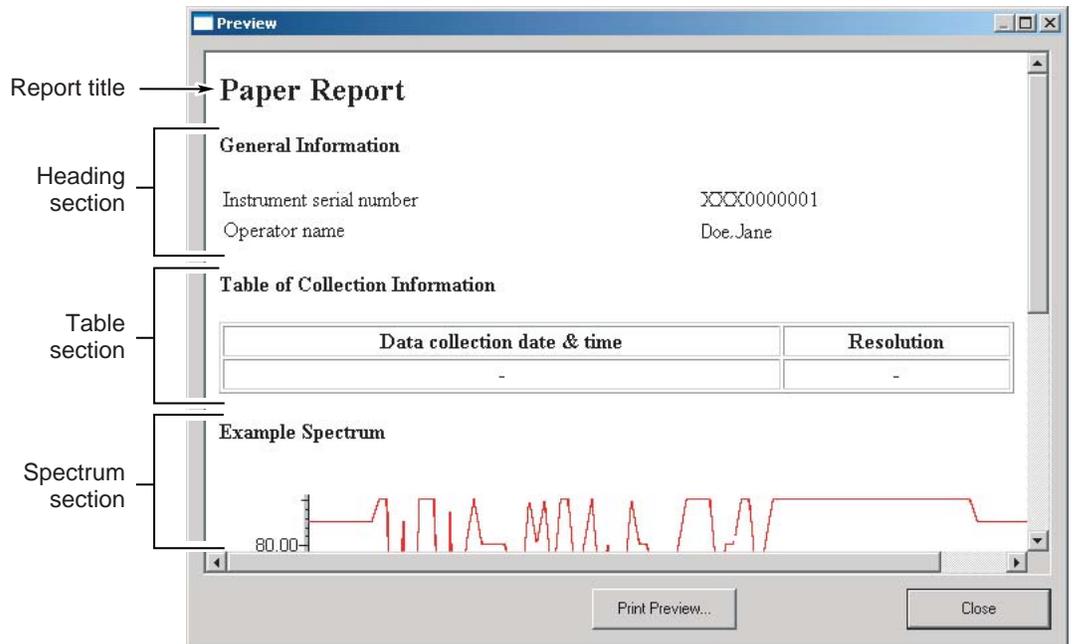
Sequence Summary. This summarizes sample component data from a run sequence event.

Summary. This defines a table of summarized data, such as measurement results and images, typically produced by events positioned in a loop.



17. Click the Preview Report button to view the report.

Here is an example:



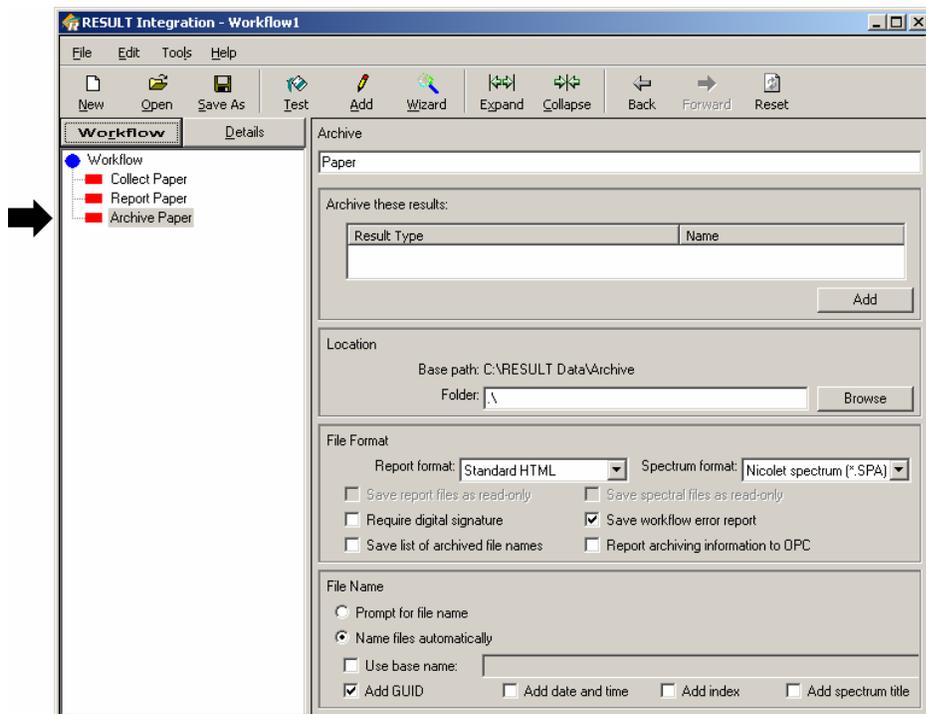
The spectrum and values shown in the preview are just placeholders. After you run the workflow later and view the report, it will contain actual results.

Click the Close button to close the report.

18. Add an Archive event to the workflow.

An Archive event instructs the workflow to archive selected sample spectra and/or sample reports generated while testing or running a workflow, using the specified file format and location. Using a custom folder or base name will help you locate and identify the data after it has been archived.

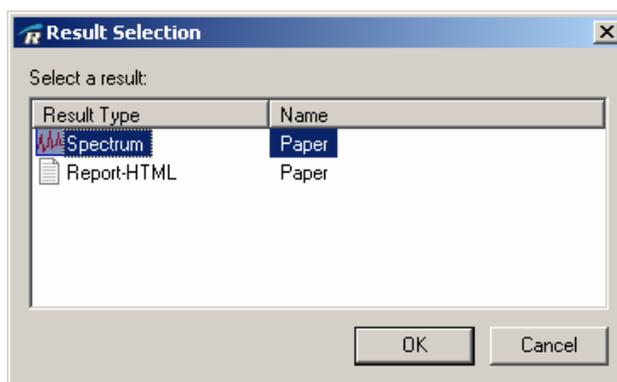
To add the Archive event, click the Add button on the toolbar, type “Paper” (or other suitable name) in the Base Name text box in the Add dialog box, select Archive in the list of events, and then choose OK. The added event appears in the workflow navigation frame:



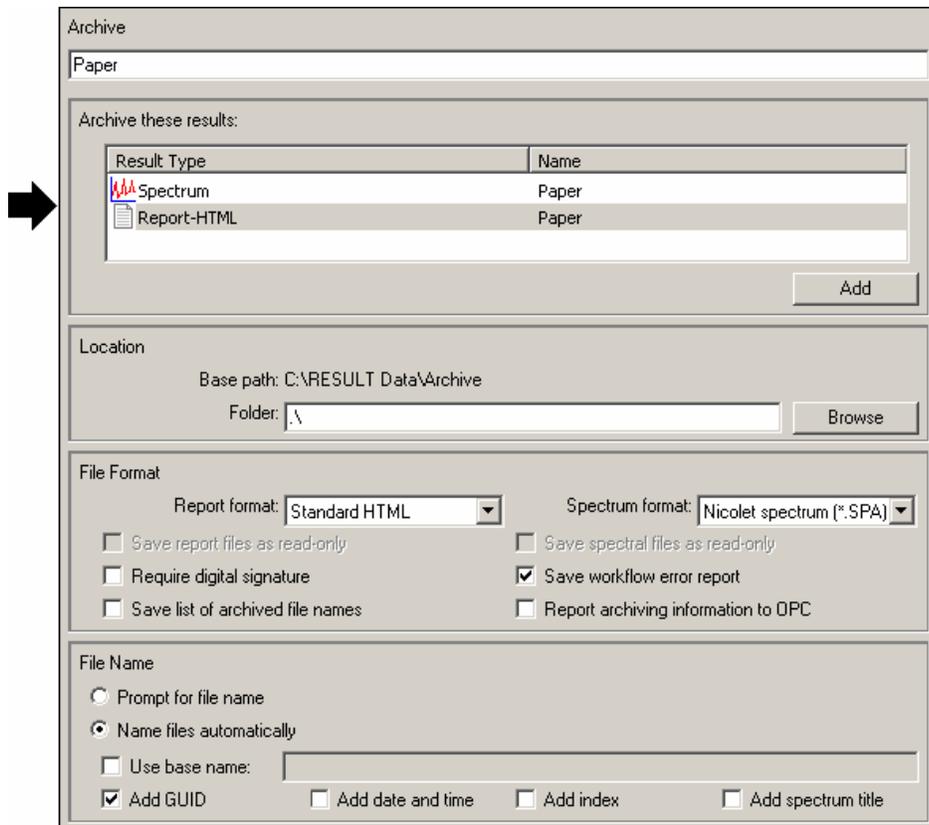
The items that will be archived are listed in the Archive These Results table, which is currently empty.

19. Add the spectrum and the report to the list of results to archive.

To do this, click the Add button in the Archive These Results group. The Result Selection dialog box appears:



Select Spectrum in the list of result types and choose OK. The Spectrum item appears in the Archive These Results table. Repeat this process to add the report to the table. When you are finished, the table contains both items:



For this tutorial we will use the default settings of the Location parameters. The workflow will archive the spectrum and report in the C:\RESULT Data\Archive directory.

We will use the default settings of the File Format parameters.

The Location parameters let you specify the location for archiving files. The Base Path readout shows the current path for archiving spectra and reports in RESULT Integration.

Some of the File Format parameters are described below.

- **Report Format.** This lets you select a format for archiving HTML reports generated by the workflow.
- **Spectrum Format.** This lets you select a format for archiving any spectra generated by the workflow.

The File Name parameters let you specify the file name that will be used to archive the data.

- **Name Files Automatically.** Select this option when you want the software to name the files automatically. You can specify whether a base name is used to archive the files, and select whether a globally unique identifier (GUID), a date stamp, an index number, the spectrum title, or any combination of these are added to the file name.

20. Specify a base name by selecting Use Base Name and entering the name “Paper” (or other suitable name) in the text box.

Creating a base name for a set of sample spectra and reports can help you easily identify them after they are archived. If you clear the Use Base Name check box, the files will be named with the default file names assigned by the software.

21. Clear the Add GUID check box and select Add Date And Time.

22. Use the Save As button on the toolbar in the RESULT Integration main window to save your workflow with the file name Paper.wfl (or other suitable name).

Testing the workflow

It is helpful to test a new workflow to make sure it functions properly before transferring it to a production system for use. The RESULT Integration test feature mimics RESULT Operation, so you can see precisely how your workflow will operate in production mode without leaving RESULT Integration.

To test the current workflow:

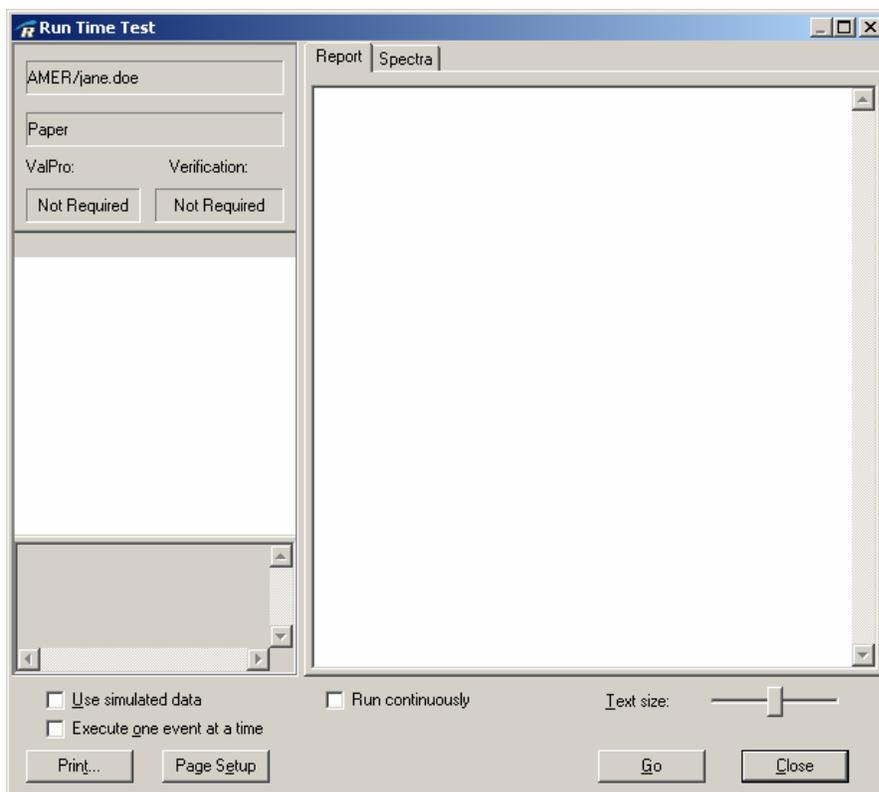
- 1. Make sure your analyzer and sample are ready for data collection.**

See your analyzer user's guide for more information.

- 2. Choose the Test button on the toolbar in the RESULT Integration main window.**

The Run Time Test window appears:

This window mimics the main screen of RESULT Operation, the production application for RESULT.

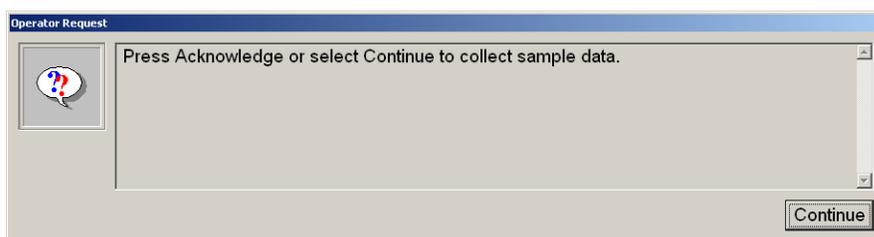


3. **Choose the Go button at the bottom of the window to start the workflow, and then follow the instructions that appear on the screen.**

Workflow events are carried out in the order in which they appear in the workflow navigation frame.

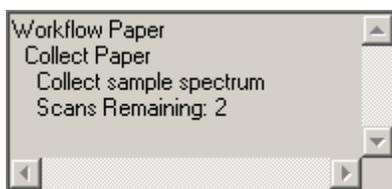
Because you cleared the Use Sample Position, Gain And Attenuation Settings check box in the background specification, the workflow collects a background automatically using the internal background reference material.

At the appropriate time the operator prompt you specified earlier appears:



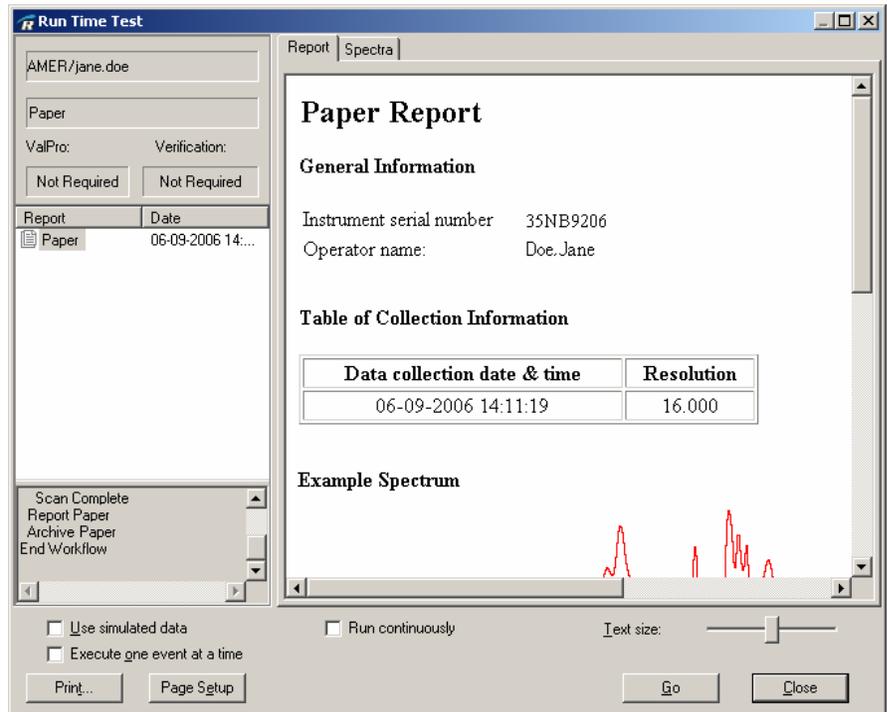
Make sure the sample is installed and then choose Continue.

The status of the workflow appears in the status box near the lower-left corner of the window:



When the workflow finishes, the report appears in the display area of the Run Time Test window:

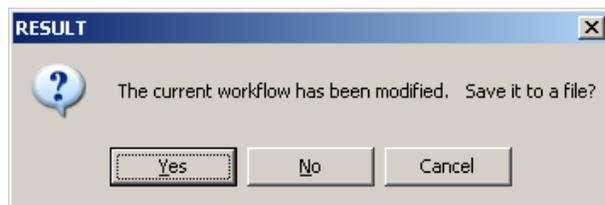
If you want to manipulate the display of the spectrum, click the Spectra tab.



4. **When you are finished testing the workflow and reviewing the report, choose the Close button in the lower-right corner of the window.**

5. **Choose Exit from the File menu to exit RESULT Integration.**

Depending on whether you changed anything without resaving the workflow, the following message may appear.



Choose Yes to save your changes.

Transferring the Workflow to RESULT Operation

After you have completed the example workflow, you are ready to transfer the workflow to RESULT Operation, the production application for RESULT. RESULT Operation can be running on the same workstation as RESULT Integration or on a different workstation or a production system. You can transfer workflows to RESULT Operation by copying the workflow and its associated files to the proper workstation and directory and then setting up the new workflow for initial use.

Note You must have administrative rights to RESULT Operation and permission to run production workflows in order to set up and run a new workflow in RESULT Operation. ▲

Starting RESULT Operation

Before you can run RESULT Operation, a RESULT software administrator must add your logon information to the RESULT user list and give you permission to run production workflows.

If you plan to run RESULT Operation from a workstation other than the workstation you used to create your workflow in RESULT Integration, or if you want to run RESULT Operation from a production system, you must receive a Windows user name and password for that workstation from your Windows administrator. The Windows user name and password will be required to log on to the new workstation. Make sure the RESULT administrator also gives you permission to run production workflows. See “Chapter 5 Managing Users” in “Section 6 Software Administration” of your *RESULT User’s Guide* for information about giving users permission to run production workflows.

Note It may be convenient to have the Windows administrator also set you up as a RESULT software administrator for the workstation that will be used to run RESULT Operation. You must have administrative rights to RESULT Operation in order to set up a new workflow in it. ▲

Depending on how your workstation has been configured, RESULT Operation may start automatically when you log on to the workstation. If it does not, double-click the RESULT Operation shortcut on your workstation desktop:

If the shortcut is not on the desktop, click the Start button on the Windows taskbar, point to Programs, point to Thermo (or Thermo Nicolet), and choose RESULT Operation.



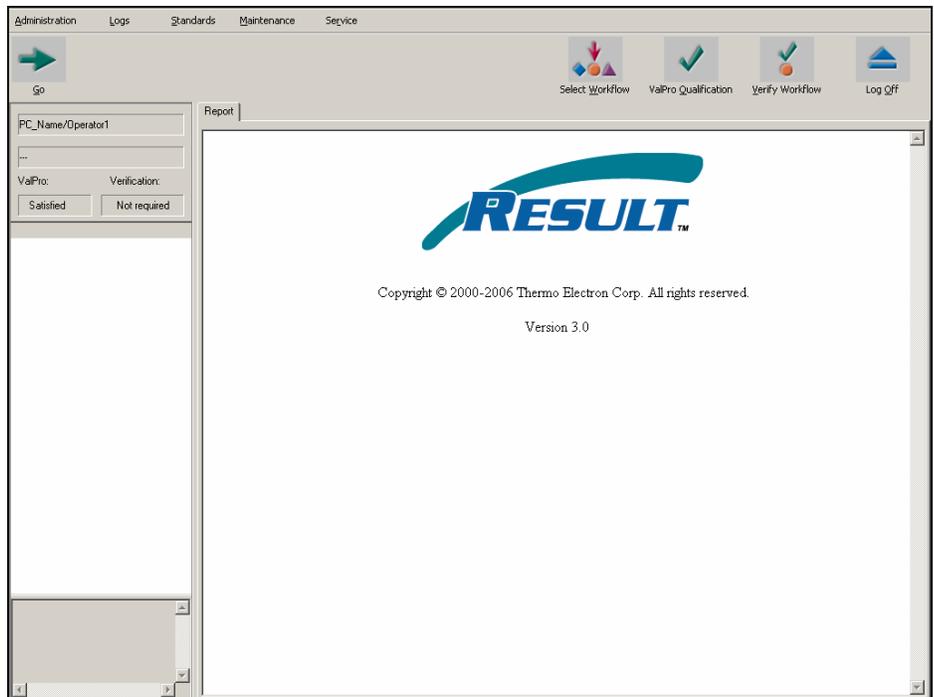
Depending on how the software has been configured, RESULT may open a dialog box asking for your password:

The password you enter must match your Windows password exactly, including the letter case.



Enter your Windows password, and then choose OK.

When the software starts, the RESULT Operation main window appears:



RESULT Operation main window

Checking the directory paths and instrument model

The RESULT Options dialog box contains features a RESULT administrator can use to specify paths for locating and storing data. We will use the current path for locating workflows and methods in RESULT Operation to transfer our example workflow to RESULT Operation.

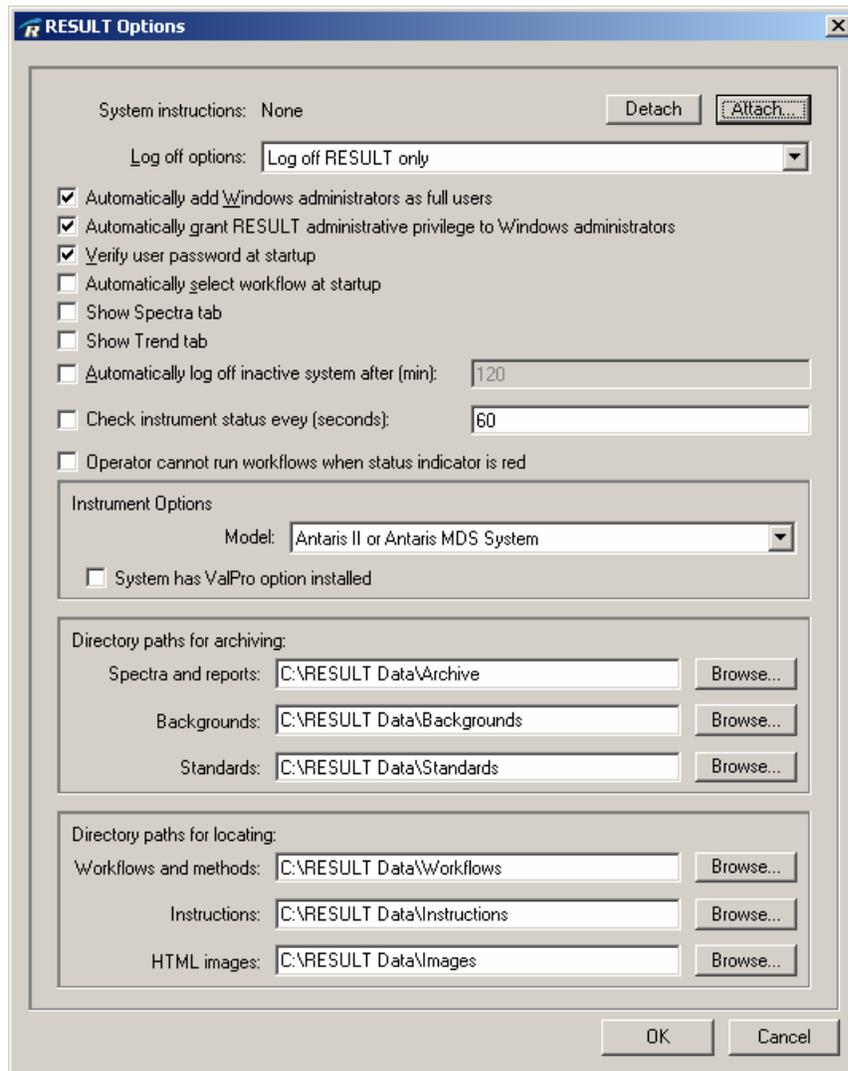
You must have administrative rights to RESULT Operation in order to open the RESULT Options dialog box.

Follow these steps:

- 1. Choose RESULT Options from the Administration menu in the RESULT Operation main window.**

Note If the Administration menu does not appear in the RESULT main window, then you do not have the RESULT administration privilege. A RESULT administrator must grant you this privilege before you can perform any administrative tasks. ▲

The RESULT Options dialog box appears:



The Model option specifies the model analyzer you are using. This is set when the system is installed.

The System Has ValPro Option Installed option specifies that your system has the ValPro System Qualification package. This allows proper software operation when you set ValPro options or run system qualification tests.

The Directory Paths For Archiving group specifies the paths for saving spectra, reports and standards.

The Directory Paths For Locating group specifies the paths for locating saved workflows, quant methods, instructions and HTML images.

Make a note of the current paths for:

- Locating workflows and methods (C:\RESULT Data\Workflows in our case). This is the default path for opening workflows and their associated method files in RESULT Operation. We will use this directory path to transfer our example workflow to RESULT Operation, as described in the next section.
- Archiving spectra and reports. This is the path RESULT Operation will use to archive spectral data and report files created while running workflows.

Note Do not change any of the settings in the RESULT Options dialog box. ▲

2. Choose OK.

Copying the workflow files

Before you can run a workflow in RESULT Operation, the workflow file must be transferred to the workstation that will be used to run RESULT Operation and placed in the proper directory and path.

To move the example workflow in order to run the workflow in RESULT Operation, copy the workflow file (Paper.wfl, or other file name you used when you created the workflow) to the proper workstation and place it in the directory designated for workflows and methods, as specified in the RESULT Options dialog box in RESULT Operation.

Note To determine the proper directory path in RESULT Operation, see the preceding section. ▲

Use Windows Explorer (available through the Start button on the Windows taskbar) to transfer the file. See your Windows documentation for information about using Windows Explorer.

Setting up the workflow

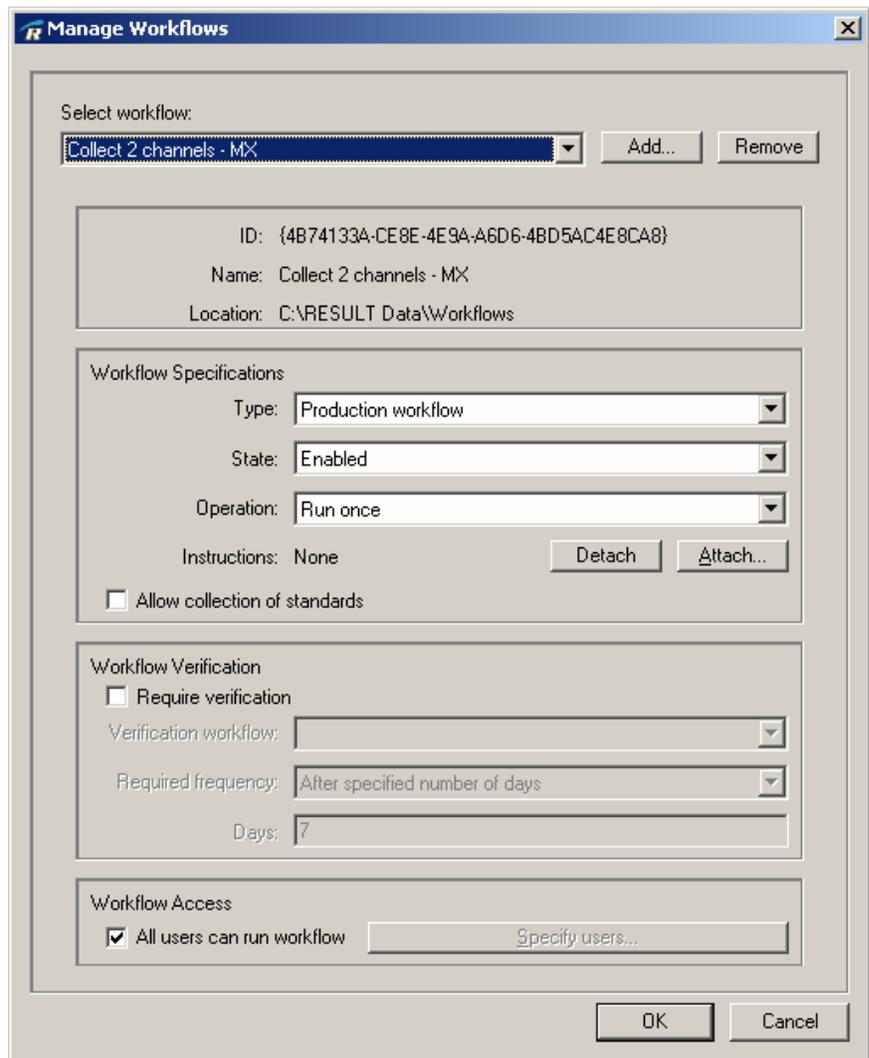
Before you can run a new workflow in RESULT Operation, the workflow must be set up to be accessible and assigned a workflow type and status. Only users with administrative rights to RESULT Operation can do this.

To set up the example workflow:

1. **Choose Manage Workflows from the Administration menu in the RESULT Operation main window.**

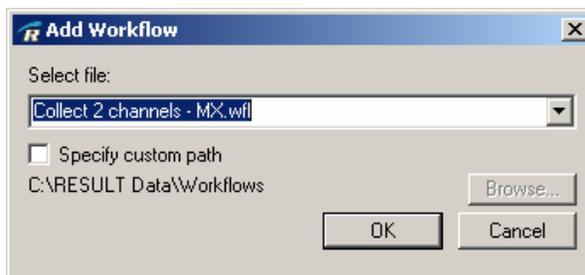
Note The Administration menu appears in the RESULT main window only if you have the administration privilege to the software. A RESULT administrator must grant this privilege before you can perform any administrative tasks. ▲

The Manage Workflows dialog box appears. Here is an example:



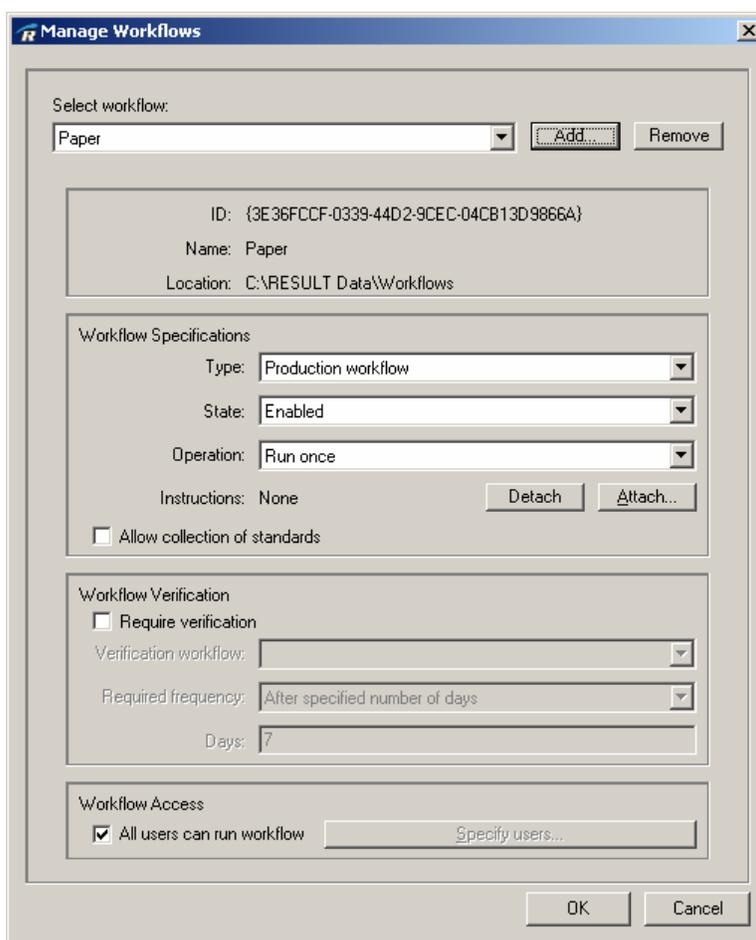
Choose the Add button next to the Select Workflow drop-down list box.

The Add Workflow dialog box appears. Here is an example:



Set Select File to Paper.wfl (or other file name you used when you saved the workflow) and choose OK.

The Manage Workflows dialog box displays the information for the selected workflow:



The software has assigned the workflow a globally unique identifier (GUID), as shown by the ID readout.

In the Workflow Specifications group, notice that Type is set to Production Workflow and State is set to Enabled.

In the Workflow Access group, note that all users can run the selected workflow.

Note Do not change the settings for any of the remaining options in this dialog box. ▲

2. Choose OK to save your changes and close the dialog box.

After you choose OK, all users should have access to run the example workflow, provided the users have the privilege to run production workflows. If you don't have permission to run production workflows in RESULT Operation, see your RESULT administrator.

Running the Workflow

This chapter explains how to run the example workflow by selecting and loading the workflow and then running the selected workflow in production mode in RESULT Operation.

Loading the workflow

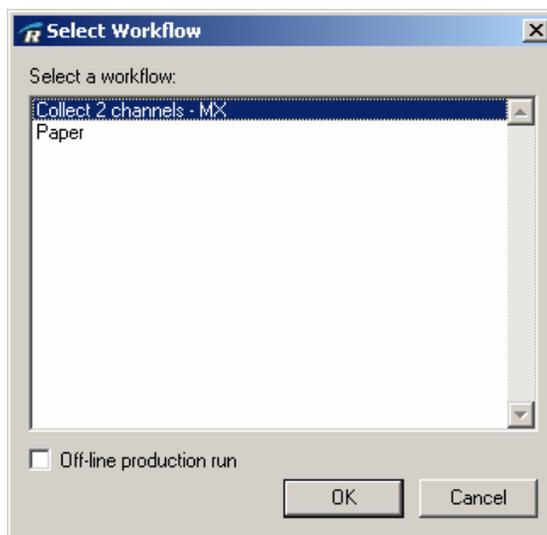
Before you can run a workflow in RESULT Operation, you must load it. Follow these steps:

1. **Choose the Select Workflow button on the toolbar in the RESULT Operation main window.**



The Select Workflow dialog box appears. Here is an example:

The Select Workflow dialog box displays all workflows that you have access to run.

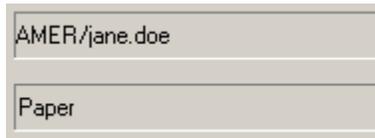


2. **Select Paper (or other name you used when you created the workflow) and choose OK.**

Clear the Off-Line Production Run option to run the example workflow in a normal production mode.

Note The Off-Line Production Run check box is available only if you have access to run workflows off-line. ▲

After you choose OK, the name of the workflow appears in the Workflow Display box in the RESULT Operation main window:

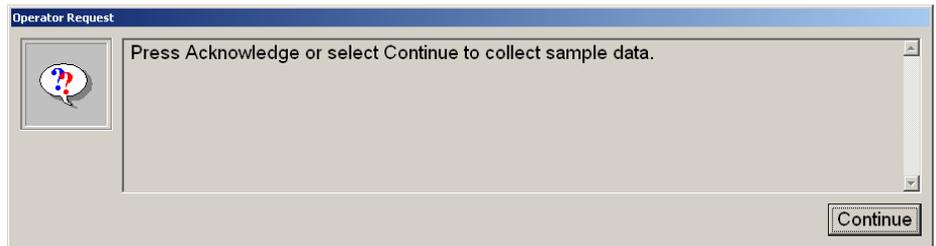


Running the loaded workflow

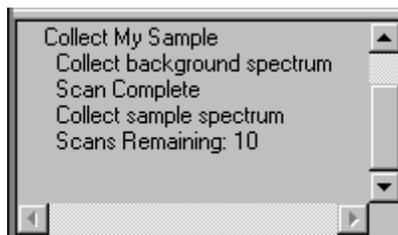


When you are ready to run the loaded workflow, choose Go on the toolbar in the RESULT Operation main window.

While the workflow is running, the software may prompt you to perform various tasks, such as selecting an option to start collecting data. Here is an example of a prompt:



While the workflow is running, the status indicator displays what the instrument and the software are doing throughout the process, as shown in the example below.



While the workflow is running, the following buttons appear on the toolbar:



Choose this button if you want to temporarily pause the workflow without stopping it. The workflow pauses after the software completes its current task.



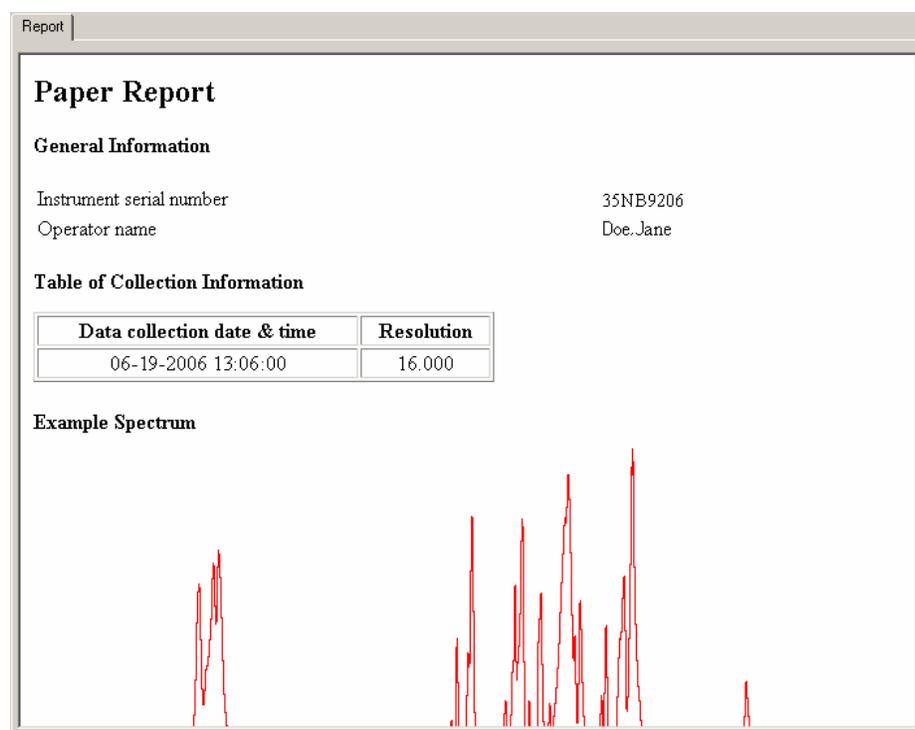
Choose this button if you want to stop and end the workflow. The workflow stops running after the software completes its current task.



While the workflow is paused, the Resume button appears. Choose it if you want to continue running the workflow.

Since the example workflow is configured to display a report, the report automatically appears in the display area when the workflow is completed:

To print a displayed report, right-click the display and choose Print from the shortcut menu.



The spectral data file for the sample and the HTML file containing the final report are given unique file names with the prefix “Paper” (or other name you used when you created the workflow) and archived in the location for storing spectra and reports as specified in the RESULT Options dialog box. See the section on RESULT Operation Directory Paths to view the current paths for storing spectra and reports collected while running a workflow in RESULT Operation. The spectral data file has the Nicolet (*.spa) file name extension. The report file uses the generic (*.htm) file name extension for HTML documents. HTML documents can be opened and viewed any time in any web browser or other application that can open HTML files.

Where to Go Next

Now that you have completed this tutorial, you should be ready to learn more about specific features of RESULT. The table below tells you where to find information of interest.

If you...	Then...
need to understand the administrative and security features of RESULT,	see "Section 6 Software Administration" in your <i>RESULT User's Guide</i> .
are ready to develop a custom workflow,	see "Section 2 RESULT Integration Software" in your <i>RESULT User's Guide</i> .
need details about setting up data collection in a workflow,	see "Collect events," "Sample specifications" and "Background specifications" in "Section 5 Workflow Events and Specifications" in your <i>RESULT User's Guide</i> .
want to learn how to configure and collect standards and build a TQ Analyst method using RESULT Integration,	see "Chapter 4 Tools For Building Methods and Viewing Spectra" in "Section 2 RESULT Integration Software" of your <i>RESULT User's Guide</i>
need to collect and view a spectrum without going through a workflow,	see "Using Quick Collect" in "Chapter 5 System Maintenance" in "Section 3 RESULT Operation Software" in your <i>RESULT User's Guide</i> .
want to learn more about selecting and running workflows in RESULT Operation,	see "Section 3 RESULT Operation Software" in your <i>RESULT User's Guide</i> .
need detailed information about developing methods using TQ Analyst software,	see your <i>TQ Analyst User's Guide</i> .
think your spectral data may be bad,	see "Common Problems With Spectral Data" in your Antaris system user's guide.
want to find the meaning of a term used in this document,	see "Glossary" in your instrument <i>User's Guide</i> .
need to talk with someone at Thermo Fisher Scientific,	see "Questions or concerns" in the "Introduction" chapter.

