SKF @ptitude Inspector

Documents features applicable to SKF MARLIN and Microlog Inspector

Part No. 32267900-EN
Revision C

User Manual

⚠ ***WARNING!*** Read this manual before using this product. Failure to follow the instructions and safety precautions in this manual can result in serious injury. Keep this manual in a safe location for future reference.

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Contents

1
Introduction to SKF @ptitude Inspector

About This Manual

As you'll soon realize, SKF @ptitude Inspector is easy to install and use. Chances are, after reading what you need to know in order to get going, you won't use this manual except as a quick reference aid.

This manual helps you install your @ptitude Inspector software, create your @ptitude Inspector machinery hierarchy of measurement POINTs, download and upload measurements between @ptitude Inspector and your data collection device, and generate graphic plots and reports for analyzing the measured machinery's condition. This manual's chapters are organized according to the steps in this process (a chapter overview follows on page 2).

> ➢ In writing this manual we assume you are familiar with common Windows™ operations. Refer to your Windows guides for information in these areas.

As you use this manual, you'll discover certain conventions used:

Bold type is used to indicate text that appears in a SKF @ptitude Inspector menu, window, or dialog.

Italics are used to emphasize important information.

➢ - are used to indicate notes to the reader.

Step-by-step procedures are sequenced using bullets, •.

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Chapter Overview

This User Manual is divided into 5 chapters and 1 appendix:

Chapter 1, Introduction - Introduces manual conventions and overviews the @ptitude Inspector / Microlog Inspector / MARLIN System.

Chapter 2, Working With Your SKF @ptitude Inspector Hierarchy - Describes in detail how to organize your machinery measurement POINTs into @ptitude Inspector hierarchies, SETs, machines, and POINTs. Also details how to establish @ptitude Inspector's many alarm criteria. Describes hierarchy editing procedures using @ptitude Inspector's Templates, Modify by Attribute feature, and Filters.

Chapter 3, Data Collection ROUTEs and Other Data Transfer Operations - Describes how to create @ptitude Inspector measurement collection ROUTEs, how to download ROUTEs to the data collection devices, how to upload measurements from the data collection devices, and how to manually enter data into the @ptitude Inspector hierarchy.

Chapter 4, Displaying Graphic Plots - Describes methods for displaying collected machinery measurements in graphic plot format, and describes in detail @ptitude Inspector's menu options for manipulating graphic plots to obtain useful analysis data.

Chapter 5, Generating and Printing SKF @ptitude Inspector Reports - Describes in detail how to create report templates and how to generate and print @ptitude Inspector reports.

Appendix A, SKF @ptitude Inspector Toolbars - Offers an overview of @ptitude Inspector's toolbars and details the custom toolbar creation procedure.

What is the SKF @ptitude Inspector / Microlog Inspector / MARLIN System?

Components of SKF Reliability System's Microlog Inspector / MARLIN System work with SKF @ptitude Inspector software to provide an inexpensive, easy-to-use machinery and plant process monitoring system. Machinery condition data and plant process data are easily recorded and automatically monitored for exceptions to normal conditions. When conditions change, the Microlog Inspector / MARLIN System directs the operator toward appropriate corrective actions. Microlog Inspector / MARLIN System components perform all of these functions in-the-field, or after uploading, on a host computer running SKF @ptitude Inspector (which facilitates easier set-up, provides long term data storage, and provides extensive reporting features).

- Most @ptitude Inspector setup fields are identical for both the Microlog Inspector and MARLIN systems. Fields specific to either the Microlog Inspector or the MARLIN are so designated.

Three components make up the Microlog Inspector / MARLIN System:

- **Machine C**ondition **D**etector Probe (MCD, MCD-IS, Wireless MCD) – Monitors overall machine and rolling element bearing vibration and temperature.
  - FFT spectrum data collection is available with MARLIN Firmware version 4.5, Microlog Inspector version 1.0, and WMCD Firmware version 6.3.0 and newer.
- **MARLIN Q**uick **C**onnect Stud (MQC) – Enhances data collection speed and accuracy, and provides very precise alarm control for MCD probe vibration and temperature POINTs.
- **Data Manager** – A portable, hand-held computer dedicated to easy input, storage, display and alarming on machinery condition data and plant process data.

These Microlog Inspector / MARLIN System components are designed to work in concert (all components interacting) or independently of each other.

Figure 1 - 1.
Some Microlog Inspector / MARLIN System Components.

Machine Condition Detector Probe (MCD / WMCD)

- With @ptitude Inspector, settings are identical for both the MCD and WMCD. Both are therefore generically referred to as the MCD.
- Microlog Inspector uses only the WMCD.

The MCD probe is a portable sensor instrument capable of measuring, displaying, and alarming on two types of machinery vibration, and machine temperature.

Vibration signals are processed by the MCD probe to produce two very meaningful vibration measurements for each data collection POINT:

- Overall velocity vibration for monitoring and detecting general machinery faults like imbalance, misalignment, and looseness; and
- Enveloped acceleration vibration for early detection of rolling element bearing and gear faults.

The MCD probe performs these measurements and the temperature measurement simultaneously. Results are immediately displayed on the MCD's display. Exceptions from normal conditions are indicated on the display, and on green, yellow, and red indicator lights.

The MCD probe is capable of working independently, or with the MARLIN hand-held computer for more precise alarm settings, data storage, and trend review capabilities. The MCD probe also works with MARLIN Quick Connect studs (MQC) for more precise alarm control and more efficient and consistent data collection.

MARLIN Quick Connect Stud (MQC)

The MQC stud enhances data collection speed and accuracy, and provides very precise alarm control for MCD probe vibration and temperature POINTs.

The MQC is a small stud-like device that mounts permanently to a machinery measurement POINT (typically a bearing cap). The system's MCD probe mounts quickly and securely to the installed MQC stud using a $\frac{1}{4}$ turn screw mount (hence the name, MARLIN Quick Connect). This mounting method ensures proper probe location and orientation, and provides more accurate vibration measurements (especially for rolling element bearing defect and gearmesh vibration signals).

There are two versions of MQC studs available:

Mechanical Stud - The MQC mechanical stud does not house programmable memory. It is a mechanical interface only. Use it to ensure proper probe location and orientation, and to attain the best possible vibration signal for periodic monitoring purposes.

Computerized Stud (MARLIN only) - In addition to providing a secure mechanical interface between the MCD probe and the measured machine, the MQC "smart stud" houses a memory chip. This chip is easily programmed via the MDM hand-held computer for POINT Id information (for automatic POINT identification) and for alert and danger alarm settings specific to the measured POINT.

During data collection, when the MCD probe is connected and the vibration and temperature measurements performed:

- The MQC smart stud's alarm settings are temporarily uploaded into the MCD probe's memory.
- In the MCD probe, the POINT's current measurement values are compared to the POINT's alarm settings, and MCD probe alarm indicators react specifically to the monitored POINT.

Again, MQC studs and the MCD probe may be used independently, or in concert with the MARLIN hand-held computer.

Data manager (MDM)

The data managers (MDM) are portable hand-held computers dedicated to easy input, storage, display, and alarming on machinery condition data and plant process data.

Figure 1 - 2.
The Microlog Inspector / MARLIN Family.

Using the provided interface cable, machine vibration and temperature measurements are input to the MDM directly from the MCD probe. Plant process data are easily recorded on the MDM's touch sensitive display using the plastic stylus "pen" tool. Collected machine data, alarm information, and alarm messages to the operator are immediately displayed on the MDM's LCD display screen for in-the-field fault detection, trend analysis, and corrective actions.

Like the SKF Microlog, the MDM can utilize data collection ROUTEs (measurement sequences set up and downloaded from SKF @ptitude Inspector) to facilitate the most efficient MDM data collection. Vibration and temperature measurements (MCD probe / WMCD POINTs), process POINTs, and routine machine inspection POINTs (including alarm settings) are setup in @ptitude Inspector and downloaded to the MDM. After data collection is complete, collected measurement and alarm data may be uploaded to the @ptitude Inspector hierarchy for long term storage, @ptitude Inspector analysis, and @ptitude Inspector reporting.

- MDM POINTs may also be easily collected in random sequence using the MARLIN data manager's built-in barcode scanning device. This built-in scanner automatically identifies machines and measurement POINTs in the field.

The Host Computer

The host computer has Microsoft Windows 7, 8.1 or 10, an Intel 2.0 GHz, 32 or 64-bit, or better processor, 6 or more Gbytes of RAM, and a 30 Gbyte hard disk (minimum 10 Gbyte); and enough free disk space to store your @ptitude Inspector measurement hierarchy (whose size depends on the number of monitored measurement POINTs). Together, the host computer and @ptitude Inspector software perform database management, trending, display, and reporting functions for the Microlog Inspector / MARLIN System.

For further details, refer to the SKF @ptitude Analyst Installation Manual (P/N 32312400).

SKF @ptitude Inspector Software

The easy-to-use @ptitude Inspector software works with DADs (Data Acquisition Devices) to assist machinery maintenance personnel in managing and analyzing their collected data. @ptitude Inspector automatically uploads measurement data from DADs and performs the tedious clerical work required in sorting, storing, and pre-analyzing measurement data. Use @ptitude Inspector to easily configure measurement POINTs (a machinery location at which measurement data is collected), for downloading measurement POINT setups to DADs, for hierarchy manipulation of collected data, and to graphically display and generate reports on collected measurement data.

Exception Reports - @ptitude Inspector automatically compares current measurement values to past measurement values, and to pre-defined alarm values to detect changes from normal machinery conditions. Using hierarchy list alarm status indicators and detailed printed reports, @ptitude Inspector alerts maintenance personnel to alarm conditions (exceptions from normal conditions).

Analysis - @ptitude Inspector displays and prints various plots and reports for analyzing machinery condition.

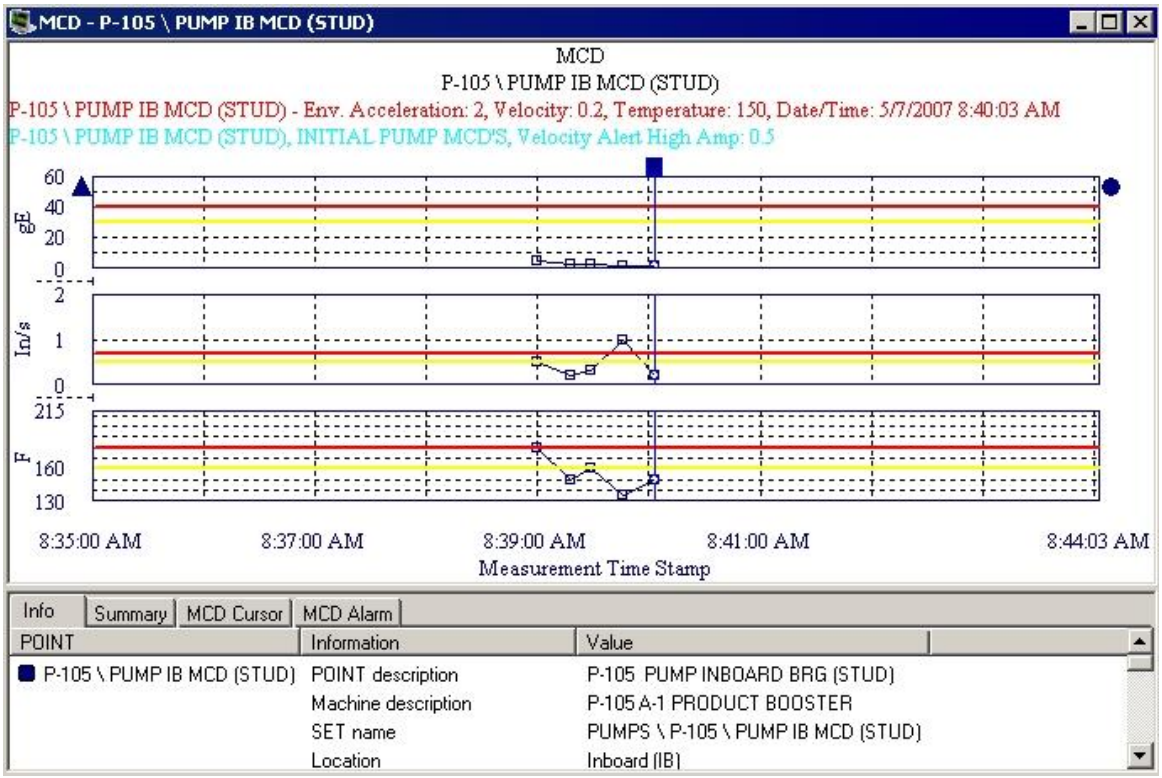


Figure 1 - 3.
An Example MCD Trend Plot.

Trend plots are easily displayed to help determine if machinery condition changes are occurring. For the easiest and most effective use of the Microlog Inspector / MARLIN System, you should:

Use SKF @ptitude Inspector to:

- Organize your hierarchy into SETs and machines.
- Add measurement POINTs to these hierarchy machines, configuring each POINT's measurement and alarm settings as it is created.
- Create a collection ROUTE of measurement POINTs.
- Download the collection ROUTE to the MARLIN data manager (MDM).

Use the SKF Microlog Inspector / MARLIN to:

- Walk the ROUTE with a DAD, collecting data for each pre-determined measurement POINT.

Use SKF @ptitude Inspector to:

- Upload the collected data to @ptitude Inspector.
- Use @ptitude Inspector's alarm detection features to quickly scan for abnormal machine conditions.
- Use @ptitude Inspector plots and reports to analyze, trend, report, and store measurement data.

2
Working With Your SKF @ptitude Inspector Hierarchy

Selecting which of your machinery requires monitoring, what measurements to perform on the selected machinery, and how often to perform these measurements requires a careful study of the needs of the plant.

Creating a Paper Copy Hierarchy

It is advisable to create a paper copy hierarchy before creating your @ptitude Inspector hierarchy. This paper copy hierarchy of your machinery measurement POINTs should be organized in hierarchical format by machines and POINTs for each machine.

For each hierarchy, use an outline format to create your organizational hierarchy, with measurement POINTs branching from machines, which branch from SETs.

HIERARCHY

POWER GENERATION
GAS TURBINE
GT INLT 1HV
GT INLT 1VV
GT INLT 1XV
GT INLT 2HV
GT INLT 2VV
GT INLT 2XV
MAIN PUMP
WATER TREATMENT

Take time to organize your paper copy hierarchy thoroughly. A complete and organized paper copy hierarchy makes building your @ptitude Inspector hierarchy much easier. When naming POINTs, it is helpful to keep machine names and POINT identifiers in columns (as exampled above).

- If you have several machines with the same title (for example, GAS TURBINE), use an alpha or numeric prefix or suffix to uniquely identify one machine only (for example, GAS TURBINE INLT).

About POINT Names

In the @ptitude Inspector system, each measurement must be identified by a descriptive name. This can be accomplished by adding a suffix to each equipment name to denote the specific location, measurement orientation, and type of measurement.

Suffixes such as AHV, 1VD, and so on, can be used to identify specific MCD Probe vibration measurements, with letters denoting which end of the machine (A, B, 1, 2, etc.), direction (H - horizontal, V - vertical, or A - axial), and type of measurement (V - velocity, D - displacement, etc.).

- In a hierarchy list, POINTs branching from the same machine must have unique names. However, POINTs branching from different machines may share the same name. Also, each machine must have a unique name. If you try to create a machine with the same name as another in the hierarchy list, SKF @ptitude Inspector automatically adds a numeric suffix to the machine's name. The same holds true for POINTs branching from the same machine. For example, if you have a machine named **Pump** and try to name another machine with the same name, @ptitude Inspector adds a suffix, and the new machine is named **Pump.1**.

Overview

In @ptitude Inspector, you create a hierarchy that organizes your monitored machinery measurements into a hierarchy structure consisting of Groups (which consist of organizational SETs, machines, or custom groups) and measurement POINTs.

Each @ptitude Inspector hierarchy displays in the Hierarchy window in which its hierarchy items list. Multiple databases display in the same Hierarchy window, and only one Hierarchy window may be open at a time.

When building your hierarchy, you insert hierarchy Groups which you identify as either a Machine hierarchy item or an organizational SET hierarchy item, or a custom Group Type you create.

IMPORTANT
All hierarchy lists must contain Machine *hierarchy items from which measurement POINTs branch. Measurement POINTs cannot branch from a SET hierarchy item or the root node. They must branch from a "Machine" hierarchy item.*

After creating your paper copy hierarchy, your next task is to use your paper copy hierarchy to input your organizational hierarchy into @ptitude Inspector to build your @ptitude Inspector hierarchy. This chapter walks you through the usual @ptitude Inspector steps for creating a new hierarchy. These steps are:

- Create one or more new hierarchies.
- Create each hierarchy's organizational SETs (optional) and Machines.
- Add measurement **POINT**s to their appropriate machine, configuring each POINT as it is created.

The general steps required to create a new hierarchical structure are listed below. Refer to the indicated dialogs and topics for more information on specific steps.

- Use the **File** menu's **New** option to create a new hierarchy. A hierarchy window displays with a **Hierarchy** root node.
    - Only the hierarchies to which the user has access display. For details on setting Hierarchy access, refer to the **Customizing Your @ptitude Inspector Software** section in **Chapter 2 – Getting Around in SKF @ptitude Inspector.**

- With the Hierarchy window active, use the **Insert** menu to insert new **Groups** in the hierarchy window. Specify the new Group's **Type** as either **Machine** group, a **SET** group, or one of your custom groups (if available).
    - Refer to **Group Properties** for more information.
- After inserting your Machine hierarchy items, click to highlight a specific Machine and insert **New POINT**s for the Machine. Specify the new POINT's **DAD** and **POINT Properties**.
    - Refer to **POINT Properties** for more information.

IMPORTANT:

**** Machines must have unique names.***

**** POINTs* must *branch from a machine.***

**** POINTs branching from the same machine must have unique names.***

Displaying Existing SKF @ptitude Inspector Hierarchies in the Hierarchy Window

- Use the **File** menu's **Open/Close** command to display the **Open/Close** dialog. All available hierarchies display in the **Open/Close** dialog.
- In the **Open/Close** dialog, enable the checkbox next to the hierarchy name(s) you wish to display in the Hierarchy window and click **OK.**

The selected hierarchies' display in the Hierarchy window.

To remove a hierarchy from the Hierarchy window:

- Use the **File** menu's **Open/Close** command to display the **Open/Close** dialog.
- In the **Open/Close** dialog, disable the checkbox next to the hierarchy name(s) you wish to no longer display in the hierarchy and click **OK**. The disabled hierarchies no longer display in the Hierarchy window.

Creating a New SKF @ptitude Inspector Hierarchy

@ptitude Inspector's installation program installs a "demo" hierarchy (unless you selected to install an empty hierarchy only). You should create a new hierarchy to store your machinery vibration measurements.

To create a new @ptitude Inspector hierarchy:

- Select the **File** menu's **New** command. The **New** dialog opens.
- Enter a unique name for the new hierarchy and click **OK**.

A blank Hierarchy window displays. The hierarchy name appears in the window's title bar.

- Access to the new hierarchy is assigned only to its creator. To give other users access to the new hierarchy, refer to the **Customizing Your @ptitude Inspector Software** section in **Chapter 2 – Getting Around in SKF @ptitude Inspector.**

Inserting @ptitude Inspector Groups

When building your hierarchy, you insert hierarchy Groups which you identify as either a Machine hierarchy item, an organizational SET hierarchy item, or a custom Group Type previously created.

To insert a new Group:

- Select the **Insert** menu's **New Groups** option. The **Group Properties** dialog displays.
    - The keyboard's **Insert** key may also be used to insert a new group when in a Hierarchy, ROUTE, or Workspace window.

Setting Your Primary Hierarchy

@ptitude Inspector's Hierarchy window displays multiple hierarchies at one time in the same window. One hierarchy must be designated as the primary hierarchy.

The primary hierarchy is the default hierarchy and owns any newly created ROUTEs and Workspaces. When working in areas of the application that require hierarchy selection (e.g., Reports, Filters, Workspaces, etc.), this hierarchy will be offered by default. When in areas of the application where hierarchy selection is not offered (for example, Transfer), the primary hierarchy will automatically be used.

To set the primary hierarchy:

- In the **File** menu's **Open/Close** dialog, you may click the **Set Primary** button to set the highlighted hierarchy as the primary hierarchy. The primary hierarchy name appears in bold with the **[primary]** displayed next to the hierarchy name.

OR

- In the **Hierarchy** window, right click the hierarchy's root node, and select the **Set Primary** option. The primary hierarchy name displays in bold.

Group Properties Dialog

General Tab

Group Properties / General fields are organized into three areas; **Settings, Segment and asset tracking,** and **Miscellaneous**.

Settings fields include:

Name – Enter a unique name to identify the new group.

Description – (optional) Enter a description to further identify the new group.

Type – Select **Machine** or **SET** from the drop down list.

- Custom group types may also be available for selection. Creation of custom group types is discussed later in this chapter.
- Once a Group's **Type** is specified, it cannot be changed.

Enable data collection checkbox – Click the checkbox to enable POINT transfer to a DAD.

- By default, data collection is enabled. To temporarily disable data collection, clear the checkbox.

Segment and asset tracking fields include**:**

Segment name – Enter text that defines the Group's physical location. For example, enter "Level 2" or "Press Section."

Asset name – Enter text that defines the physical machinery currently occupying the **Segment** entered above. For example, enter a machine's serial or part number.

- **Segments** remain fixed while **Assets** may be moved from one location (segment) to another.
- **Segment name** and **Asset name** fields are unavailable when working with a template item's group properties.

Miscellaneous fields include:

Priority – Priority assignments may be used in filtering and reporting. A machine is typically given a Priority rating when a problem is found and you wish to prioritize the problems to be addressed. Specify a machine's priority from the drop down list.

- The **Priority** field is only available if you are working with a Machine-type Group.
- Assign a color for each machine priority to allow easy identification of all machines with priority assignments. Enable to display a machine priority color in the hierarchy for all machines with assigned priority levels on the **Customize** / **Preferences** / **General** tab. Default is disabled.

Available priority assignments are:

<No Priority>
1 – Critical
2 – High
3 – Medium
4 – Low
5 – Lowest

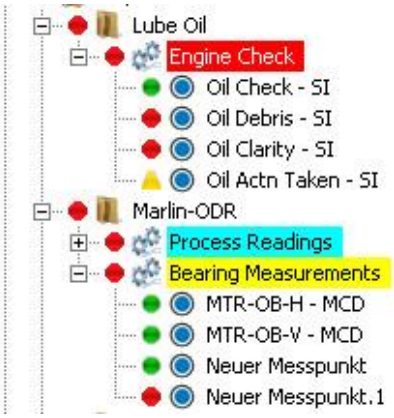


Figure 2 - 1.
Example of Machine Priority Color Displayed in Hierarchy.

Filter Keys Tab

@ptitude Inspector allows you to create **Filter Keys** which can be associated with POINTs and Machines for automated filtering purposes. For example, if you activated a "Pump" filter key for a Group and later filter a hierarchy list using the **Filter Key / Pump**, then all Groups with active Pump filter keys display in the filtered Workspace.

➢ Filter key creation is discussed later in this chapter.

Filter key searches list all POINTs or Machines sharing a specified filter key (or multiple filter keys). The **Filter Key** tab lists all created filter keys and indicates whether or not they are currently assigned.

- Click a specific filter key's checkbox to associate it to the current POINT.

  ➢ The checkbox appears gray if the filter key is enabled for a parent hierarchy item.

- Click the **Filter Key** dialog's **OK** button to save your filter key assignments.

Notes Tab

The **Group Properties / Notes** tab allows you to attach a text note to the Group along with a date / time stamp. This feature conveniently stores and records relevant Group information such as maintenance history.

➢ Coded notes uploaded from the Microlog Inspector / MARLIN for the current Machine display in the **Notes** tab.

- Click the **Notes** tab's **Add** button to add a new note and date / time stamp.
- Click the **Save** button to save edits made to a note.
- Click the **Undo** button to cancel edits made to a note.
- Click the **Remove** button to remove the selected note from the display.

Group Properties / Notes fields include:

Date – Select the current date from the drop down list.

Time – Select the current time.

The selected date and time appear in the dialog's left **Notes** field.

Text – Type in desired note text in the text field.

- Click the tab's **OK** button to save all entries.

Images Tab

Scanned photographs or digital images can be added to a particular Group, stored in the database, and viewed from the **Images** tab. Images help identify SETs / machines, organize similar equipment, and document known defects.

Group Properties / Images fields include:

Image – All attached images display in the drop down list.

Description – Enter text to identify the image. Click the **Save** button to save your description entry. If saved, the new description replaces the filename in the **Images** list.

- Click **OK** to save your new description entry.

To add a new image:

- Click the **Add** button to add a new image. The Windows' **Open** dialog displays. Select desired image and click **Open** to add or **Cancel** to undo.
    - ➢ Added images use the filename as the default description.

To replace / update the current image:

- Click the **Browse** button.
- Select a replacement image. The new image displays on the tab.
- Click **Save** to confirm the image replacement.
- Click **Cancel** to undo the image replacement.
    - ➢ The image name and description of the old image are retained for the replacement image.

To export an image to a specific location:

- Select the image to export.
- Click the **Export** button.
- When prompted, enter the desired export location and click **OK**.

The image is copied and saved to the specified location, but still remains attached to the assigned Group.

Messages Tab

The **Messages** tab allows you to apply previously defined "shared" messages, and to create new, private messages to assign to the selected group.

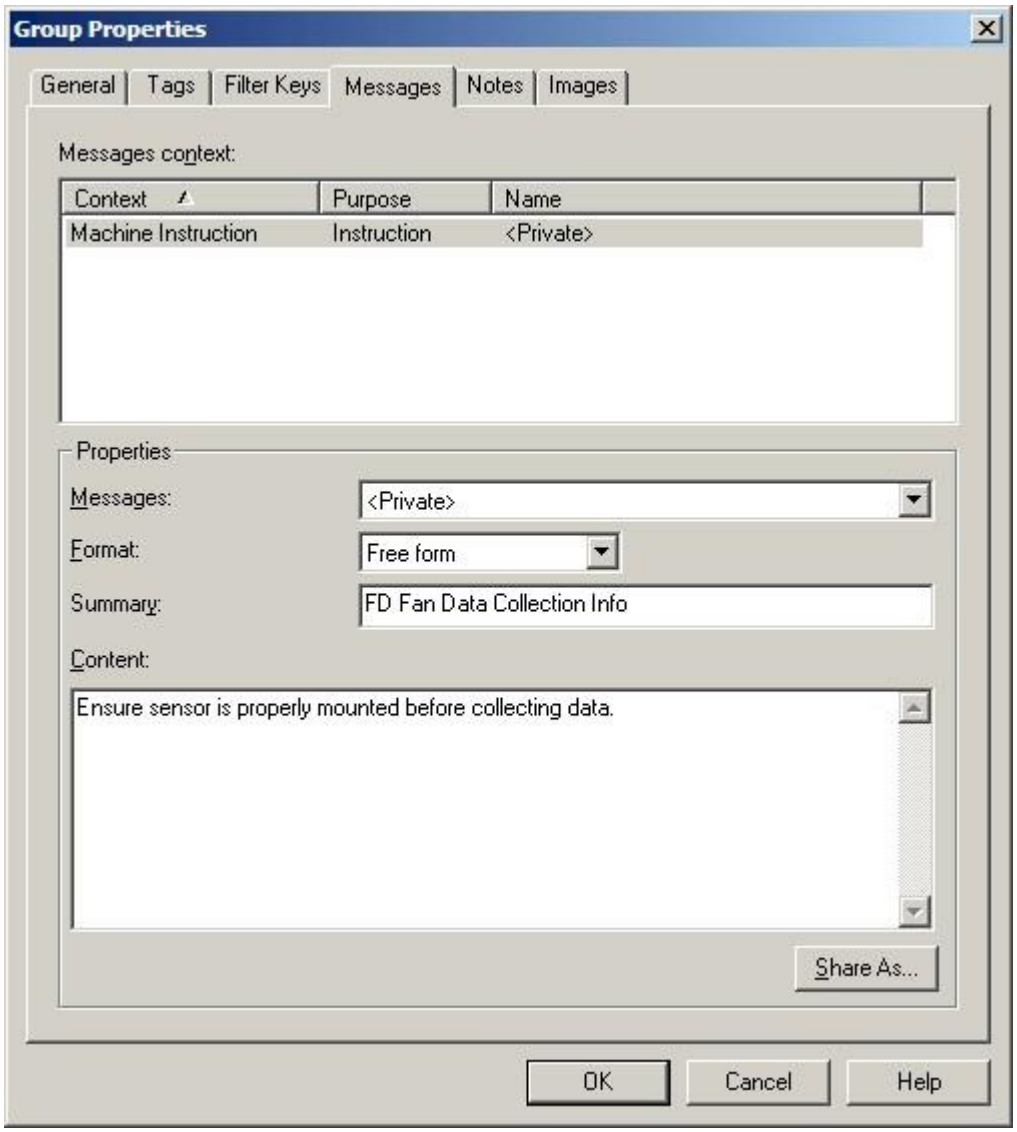


Figure 2 - 2.
The **Group Properties** Dialog's **Messages** Tab.

@ptitude Inspector's **Group Properties / Messages** feature allows you to create and assign one message for general machine instruction purposes. The **Messages context** area displays the type of message available for assignment and any existing messages already applied. You can assign a previously created shared message to the current group, or create and apply a new private message.

The **Name** drop down list displays all previously created messages and a <**Private**> option. Use this drop down list to specify whether you wish to set up a unique **<Private>** message for the current group only, or specify a previously defined "shared" message (selected by name). If you specify a shared message, its format, summary,

and content automatically display in subsequent fields. If you specify a Private message, proceed to configure the message settings as described below.

> ➢ For more information on creating and managing public messages, refer to the **Customize / Database Operations** section later in this chapter.

Format – This drop down list allows you to specify your message's format.

Free form – Allows you to manually type in the summary and content for your message.

Hyperlink – Allows you to create a link to an existing file on your Microlog Inspector / MARLIN. During data collection, when the specified message condition is met, the originating application (Word, Acrobat) launches the machine's hyperlinked message file on the unit. When the message condition occurs, an **Instruction (i)** button becomes available (un-ghosts) on the display. Tap this **Instruction (i)** button to display the message. This feature allows you to associate detailed instructions with particular machines while still keeping downloads small and efficient.The message file and the application used to create the message must both be present on the Microlog Inspector / MARLIN. Message files are downloaded to the Microlog Inspector / MARLIN using ActiveSync. Reference your ActiveSync User Manual for more information.

Summary – Type in text summarizing your message for easy recognition. For example, if you have a message that details specifics about a group of machinery, your summary may read, "FD Fan Data Collection Information."

Content

Free form messages - Enter your complete message in the content text area. Using the above example, your alarm message content would include detailed data collection information, specific to the current group. For example, your message may read "Ensure sensor is properly mounted before collecting data, etc."

Hyperlink message – Enter the path and filename for the file you wish to associate with the message. For example, C:\\MARLIN Instructions\\FD FAN\\Data Collection Instructions.doc.

To assign a shared message to the current group:

- Select the shared message from the drop down list and click the **OK** button. Shared messages may be applied to an unlimited number of groups.

Shared Message

Alarm messages initially created as private messages may be converted into shared (public) messages. To share a newly created Private message, select the new Private message and click the tab's **Share As** button.

The **Enter Name** dialog specifies the message as a shared (public) message. When the **Enter Name** dialog displays, you will be prompted to give the shared message a unique name for easy identification.

- Enter a name for the shared message and click the **OK** button.

The new shared message **now** appears as an available selection in the dialog's drop down list. Shared messages are easily assigned to other groups to simplify setup and maintenance.

Details Tab

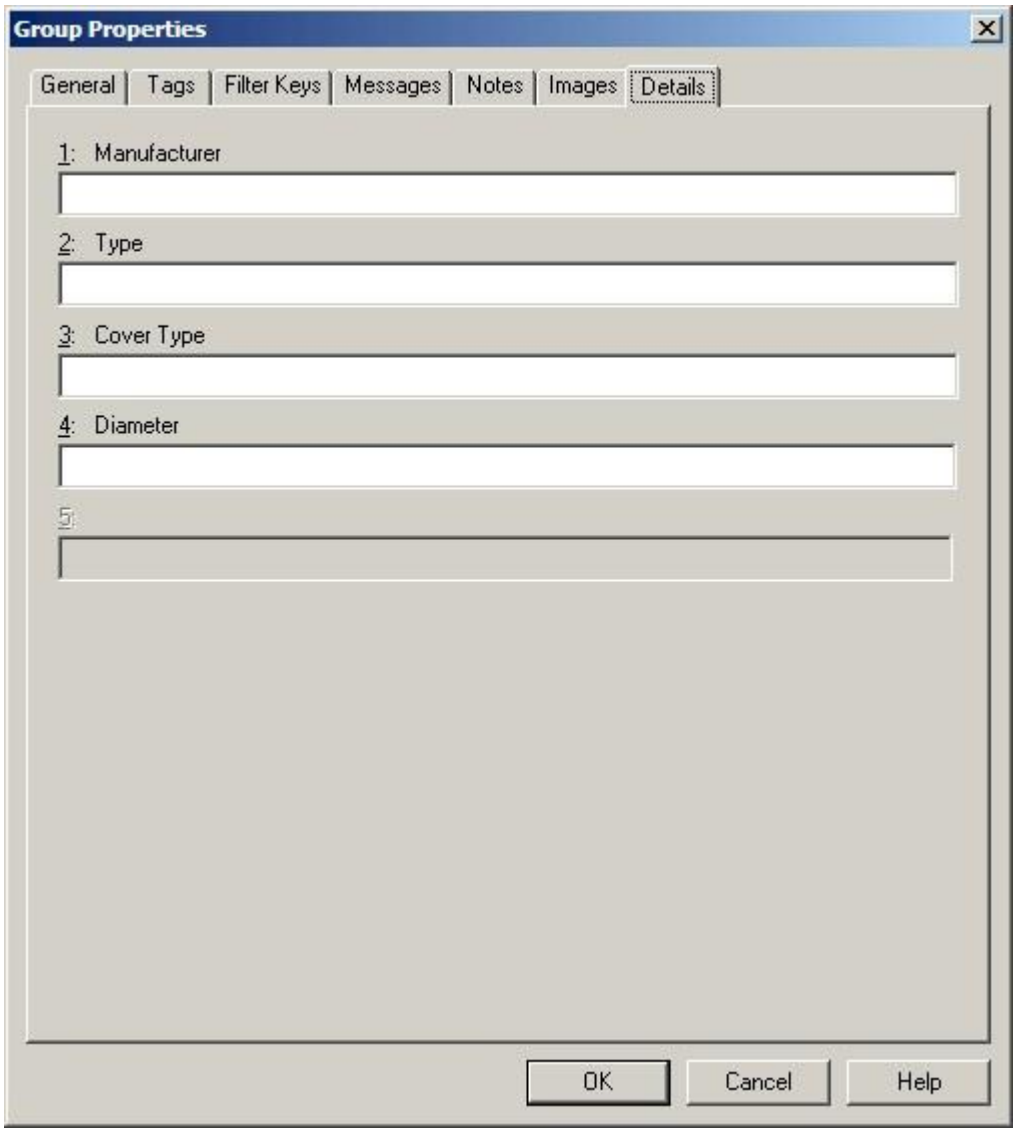


Figure 2 - 3.
The **Group Properties** Dialog's **Details** Tab.

- The **Details** tab is available only for custom Group Types.

Additional Group information can be entered in the **Details** tab and stored in the database. The five fields that appear in the **Details** tab are defined in the **Customize / Database / Group Types** dialog when you define a custom Group Type.

Enter appropriate information in the text box following the customized fields. Helpful **Details** information may include serial number, RPM, address, etc. These fields may be customized to support any type of information applicable to your specific application.

The **Details** tab is unavailable if detail options have not been previously defined in the **Database / Group Type** dialog.

Inserting New POINTs

Use the **Insert** menu to insert new measurement POINTs to your hierarchy machines.

To insert new POINTs:

- In the Hierarchy window, select the machine from which you wish the new POINT to branch.
- Select the **Insert** menu's **New POINT** option. The **DAD / POINT Type Selection** dialog displays.
    - ➢ The keyboard's **Insert** key may also be used to insert a new POINT.

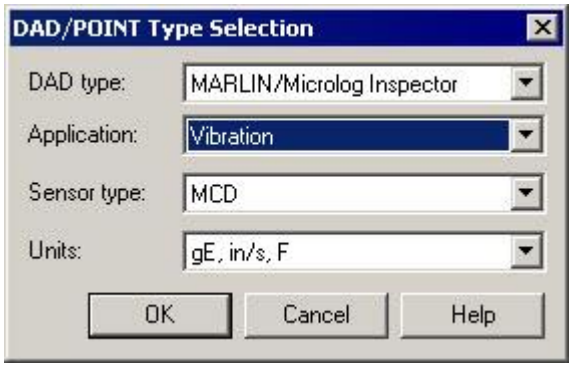


Figure 2 - 4.
The **DAD / POINT Type Selection** Dialog.

From the **DAD / POINT Type Selection** dialog, your **DAD Type**, **Application, Sensor,** and **Units** selections determine the POINT type

Fields in this dialog include:

DAD Type – Select the appropriate data acquisition device type from the drop down list of available DADs.

Application – Only applications consistent with your DAD type selection display in the **Application** drop down list. Select the appropriate application.

- ➢ For example, select **Inspection** for an inspection POINT, **General** for a process POINT, or **Vibration** for an MCD POINT.

Sensor – Only sensors consistent with your selected application display in the **Sensor** drop down list. Select the appropriate sensor.

Units – Only units consistent with your selected sensor type display in the **Units** drop down list. Select the appropriate units.

- Click **OK** to save your settings.
- Click **Cancel** to terminate POINT insertion.

➢ Once the POINT is saved with **DAD / POINT Type** information, this information cannot be modified.

After **DAD / POINT Type Selection** settings are saved, the **POINT Properties** dialog automatically displays.

POINT Properties

The **POINT Properties** dialog allows you to enter all POINT information and settings. On each tab:

- Click **OK** to save settings
- Click **Cancel** to undo settings.

General Tab

The **POINT Properties** dialog's **General** tab allows you to enter the POINT name and description and displays the DAD / POINT Type information you previously entered.

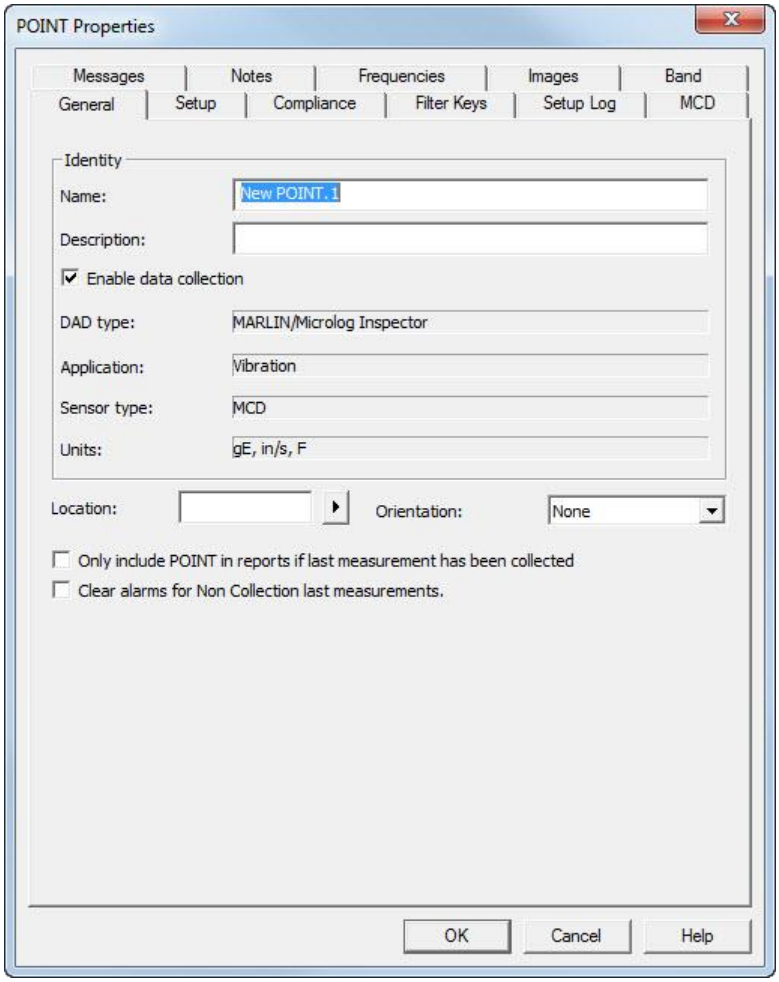


Figure 2 - 5.
The **POINT Properties** Dialog's **General** Tab.

POINT Properties / General fields include:

Name – Enter a unique name to identify the POINT.

Description – Enter a description to further identify the POINT.

Enable data collection – When POINTs are downloaded to the collection instrument, the **Enable data collection** setting determines whether the POINT is downloaded or ignored. Click the checkbox to enable.

DAD Type – Displays the DAD type previously assigned when the POINT was created.

Application – Displays the application type assigned when the POINT was created.

Sensor – Displays the sensor type assigned when the POINT was created.

Units – Displays the appropriate measurement unit assigned when the POINT was created.

- The **DAD Type**, **Application**, **Sensor**, and **Units** fields of the **General** tab cannot be edited once they have been assigned.
- When a POINT is disabled from downloading, its existing alarm conditions do NOT affect the system.

Location – Enter the data collection POINT on the machine. Options include:

Normal – Alphabetic identifiers A-J.

Displacement – Numeric identifiers 1-10.

Other – Six specific identifiers:

Drive End
Non-Drive End
Outboard
Inboard
Coupled End
Non-Coupled End
Tending Side
Drive Side

Orientation – Select from drop down list options (**Axial, Horizontal, None, Radial, Triax, Vertical, X, Y**).

Exclude from reports if last measurement is a Non-collection event. – Select (check) to have any reports that would include this POINT exclude it if its last measurement was a non-collection event (for example, the machine was marked as non-operating or certain measurement conditions were not met).

Clear Alarms for Non-collection last measurements. – Select (check) to have the system clear any previous measurement alarms for this POINT if its last measurement was a non-collection event (for example, the machine was marked as non-operating or certain measurement conditions were not met).

Setup Tab - Process POINTs

Enter Process POINT setup information in this tab.

- The **POINT Properties / Setup** tab displays differently, depending on the POINT type. The following **Setup** fields apply to Process POINTs.

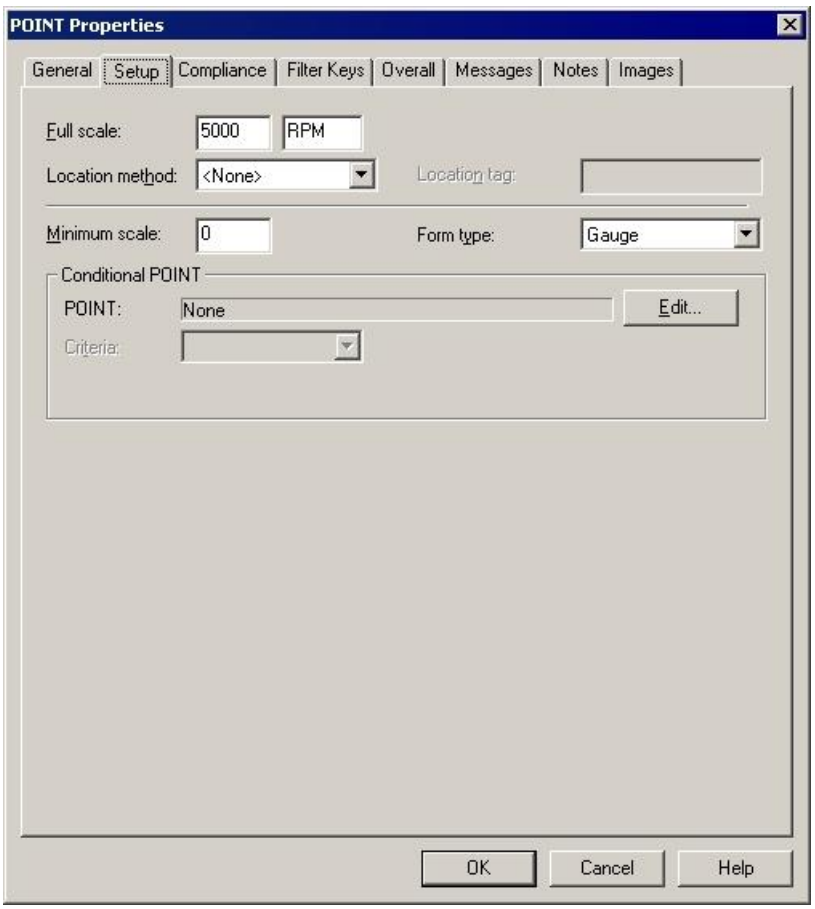


Figure 2 - 6.
The **POINT Properties** Dialog's **Setup** Tab for Process POINTs.

If **Setup** units allow editing, the values display in an edit field.

- The POINT Setup Validation Dialog launches when you enter incompatible or erroneous information on the **Setup** tab. Reference the **POINT Setup Validation** section later in this manual for more information.

Setup fields include:

Full Scale - Enter a number to define the anticipated maximum amplitude to be measured for this POINT.

Location Method - Specify the method used to identify the POINT. From the drop down list, select the appropriate **Location Method** for the POINT. Options include:

None - While collecting data, the POINT is manually identified using hierarchy list controls.

Barcode / RFID - The barcode scanner is used to automatically locate and identify the machine / POINT in the hierarchy list.

Location Tag - Enter a unique identifier that links the POINT to a specific machine location.

Minimum Scale - Enter the minimum value to display on the input display (may be positive, negative, or zero).

Form Type - Options include **Bar**, **Gauge**, **Keypad**, or **Slider**. Select the desired data input display type.

Conditional POINT Setup

Conditional POINTs allow data collection only when a specified condition exists. As an example, let's assume Inlet Pressure is specified as the conditional POINT for Outlet Pressure (dependent POINT). In order for Outlet Pressure to be collected, Inlet Pressure must have a reading of 1000 PSI or greater (condition).

Once a conditional POINT has been associated with the current POINT, you may edit the conditional POINT's criteria from the setup tab.

To associate a conditional POINT with the current POINT:

- Click the **Conditional POINT** area's **Edit** button. The **Conditional POINT** dialog displays.
- Click the **Select conditional POINT** option button.
- In the list, click to select the conditional POINT.
- In the **Criteria setup** area, select the condition that must be present in the conditional POINT for data to be collected for the current POINT.

  Criteria options include:
  In alarm
  Out of alarm
  Above
  Below
  In range
  Out of range
  Is equal (to the selected Result)
  Is not equal (to the selected Result)

  - For details regarding how to set up alarms, refer to the **Alarm Database** section later in this chapter.

To clear the associated conditional POINT from the current POINT:

- Click the **Clear** button.
- Click **OK**.

Setup Tab - MCD POINTs

Enter MCD POINT setup information in this tab.

- The **POINT Properties / Setup** tab displays differently, depending on the POINT type. The following **Setup** fields apply to MCD POINTs.

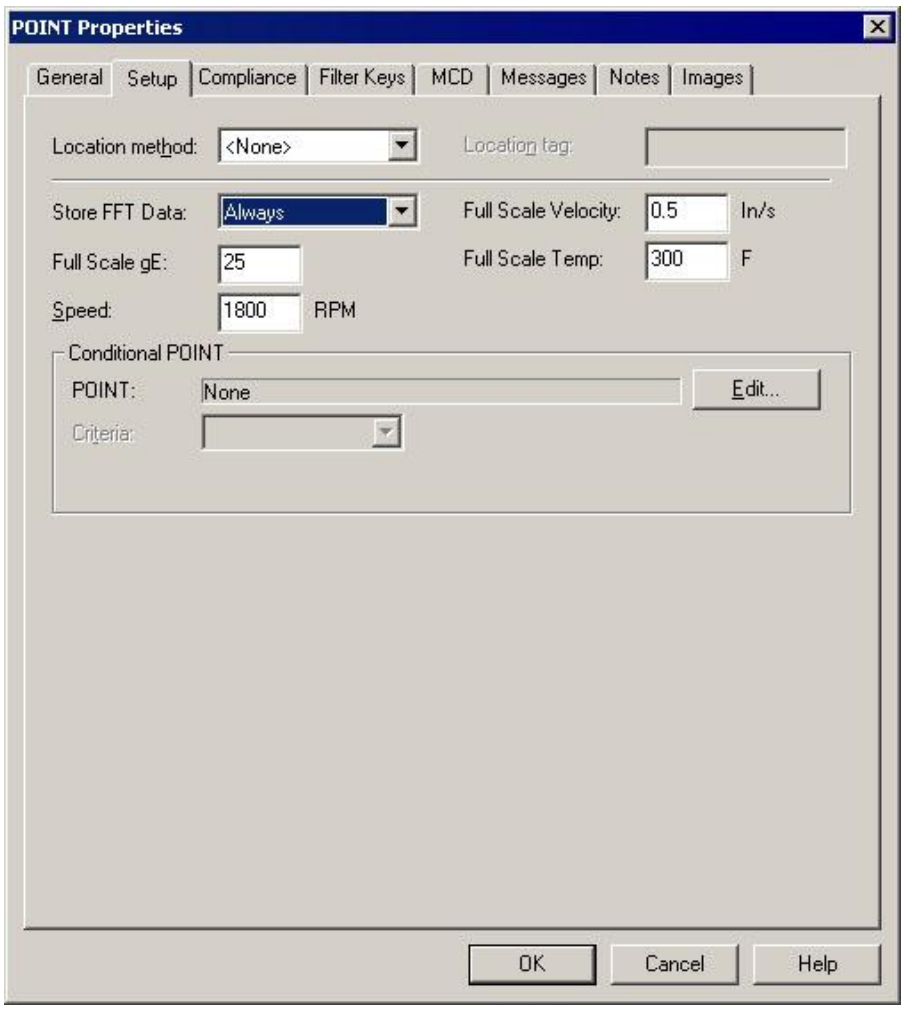


Figure 2 - 7.
The **POINT Properties** Dialog's **Setup** Tab for MCD POINTs.

If **Setup** units allow editing, the values display in an edit field.

- The POINT Setup Validation Dialog launches when you enter incompatible or erroneous information on the **Setup** tab. Reference the **POINT Setup Validation** section later in this manual for more information.

Setup fields include:

Location Method - Specify the method used to identify the POINT. From the drop down list, select the appropriate **Location Method** for the POINT. Options include:

None - While collecting data, the POINT is manually identified using hierarchy list controls.

Barcode / RFID - The barcode scanner is used to automatically locate and identify the machine / POINT in the hierarchy list.

Location Tag - Enter a unique identifier that links the POINT to a specific machine location.

Store FFT Data – Specify when the WMCD will collect and store FFT data for the POINT.

- FFT spectrum data collection is available with MARLIN Firmware version 4.5, Microlog Inspector version 1.0, and WMCD Firmware version 6.3.0 and newer.

None – Never stores FFT data for the POINT.

Always – Always stores FFT data for the POINT.

On Alarm – Only stores FFT data for the POINT when the WMCD detects a measurement outside the alarm levels.

Full Scale gE - Enter a number to define the anticipated maximum enveloped acceleration to be measured for this POINT.

Full Scale Velocity- Enter a number to define the anticipated maximum velocity to be measured for this POINT.

Full Scale Temp- Enter a number to define the anticipated maximum temperature to be measured for this POINT.

Speed – Enter the nominal shaft speed in RPM. Analysis features (i.e., harmonics are initially based off the entered shaft speed.

Conditional POINT Setup

Conditional POINTs allow data collection only when a specified condition exists. As an example, let's assume Inlet Pressure is specified as the conditional POINT for Outlet Pressure (dependent POINT). In order for Outlet Pressure to be collected, Inlet Pressure must have a reading of 1000 PSI or greater (condition).

Once a conditional POINT has been associated with the current POINT, you may edit the conditional POINT's criteria from the setup tab.

To associate a conditional POINT with the current POINT:

- Click the **Conditional POINT** area's **Edit** button. The **Conditional POINT** dialog displays.
- Click the **Select conditional POINT** option button.
- In the list, click to select the conditional POINT.

- In the **Criteria setup** area, select the condition that must be present in the conditional POINT for data to be collected for the current POINT.

  Criteria options include:
  In alarm
  Out of alarm
  Above
  Below
  In range
  Out of range
  Is equal (to the selected Result)
  Is not equal (to the selected Result)

  - For details regarding how to set up alarms, refer to the **Alarm Database** section later in this chapter.

To clear the associated conditional POINT from the current POINT:

- Click the **Clear** button.
- Click **OK**.

Setup Tab - Inspection POINTs

In addition to using the Microlog Inspector / MARLIN System's Condition Detector sensor (WMCD / MCD), or using its stylus pen and touch sensitive display to manually input process data from machinery gauges, inspection POINTs allow the operator to use the stylus pen and touch sensitive display to record visual observations (or perform and record a physical test of some sort) over time using a set of consistent observable results. The setup of an inspection POINT consists of specifying the observed condition along with the observed results.

Alert and danger alarm conditions can be assigned to inspection results and provide immediate feedback messages to the data collection person when the inspection results are in alarm condition.

Enter Inspection POINT setup information in this tab.

- The **POINT Properties / Setup** tab displays differently, depending on the POINT type. The following **Setup** fields apply to **Inspection** and **MCD** POINTs defined with the DAD.

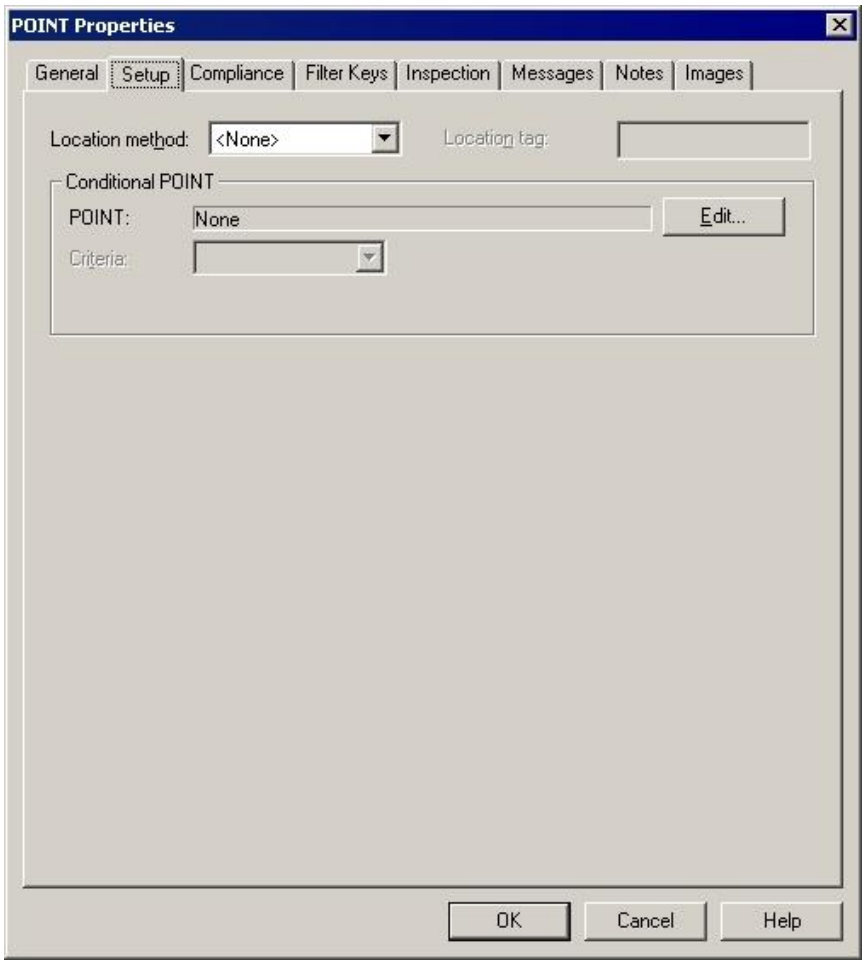


Figure 2 - 8.
The **POINT Properties** Dialog's **Setup** Tab for
Inspection and MCD POINTs.

If **Setup** units allow editing, the values display in an edit field.

- The POINT Setup Validation Dialog launches when you enter incompatible or erroneous information on the **Setup** tab. Reference the **POINT Setup Validation** section later in this manual for more information.

Setup fields include:

Location Method - Options include **None**, **Barcode**, or **MQC ID**. From the drop down list, select the appropriate **Location Method** for the POINT. Options include:

None - While collecting data, the POINT is manually identified using hierarchy list controls.

Barcode/RFID - The barcode scanner is used to automatically locate and identify the machine / POINT in the hierarchy list.

MQC ID - An MQC computerized stud connection automatically locates and identifies the POINT in the hierarchy list, and automatically initiates the POINT's data input display. (MCD POINTs only)

Location Tag - A unique identifier that links the POINT to a specific machine location, such as the MQC-ID, or the barcode number is automatically read from the computerized stud.

Conditional POINT Setup

A conditional POINT can be set to collect data for a POINT when a specified condition is detected. For example, if POINT A (conditional POINT) is in alarm (condition), then data for POINT B is collected. If the specified condition is not detected, then no data for POINT B is collected.

Once a conditional POINT has been associated with the current POINT, you may edit the conditional POINT's criteria from the setup tab.

To associate a conditional POINT with the current POINT:

- Click the **Conditional POINT** area's **Edit** button. The **Conditional POINT** dialog displays.
- Click the **Select conditional POINT** option button.
- In the list, click to select a conditional POINT.
- In the **Criteria setup** area, select the condition that must be present in the conditional POINT to collect data for the current POINT, from the **Criteria** drop down list.

Criteria options may include:

In alarm
Out of alarm
Above
Below
In range
Out of range
Is equal (to the selected Result)
Is not equal (to the selected Result

- Click **OK**.

To clear the associated conditional POINT from the current POINT:

- Click the **Clear** button
- Click **OK.**

Inspection Tab

Enter the Inspection Prompt, possible Results of the inspection, and resulting Alarm Conditions for each possible result in the **Inspection** tab.

Inspection Results and Alarm Conditions

An alert or danger alarm condition may be assigned to each of the five ***Inspection results***. In addition, alert and danger alarm messages may be assigned to corresponding alarm conditions using the dialog's **Messages** tab. If, during data collection, the operator selects an inspection result associated with an Alert or Danger alarm condition, the appropriate alarm message is displayed.

- For more information on creating and assigning alert and danger messages, refer to the **POINT Properties / Messages** and the **Customize / Database Operations / Messages** sections later in this chapter.

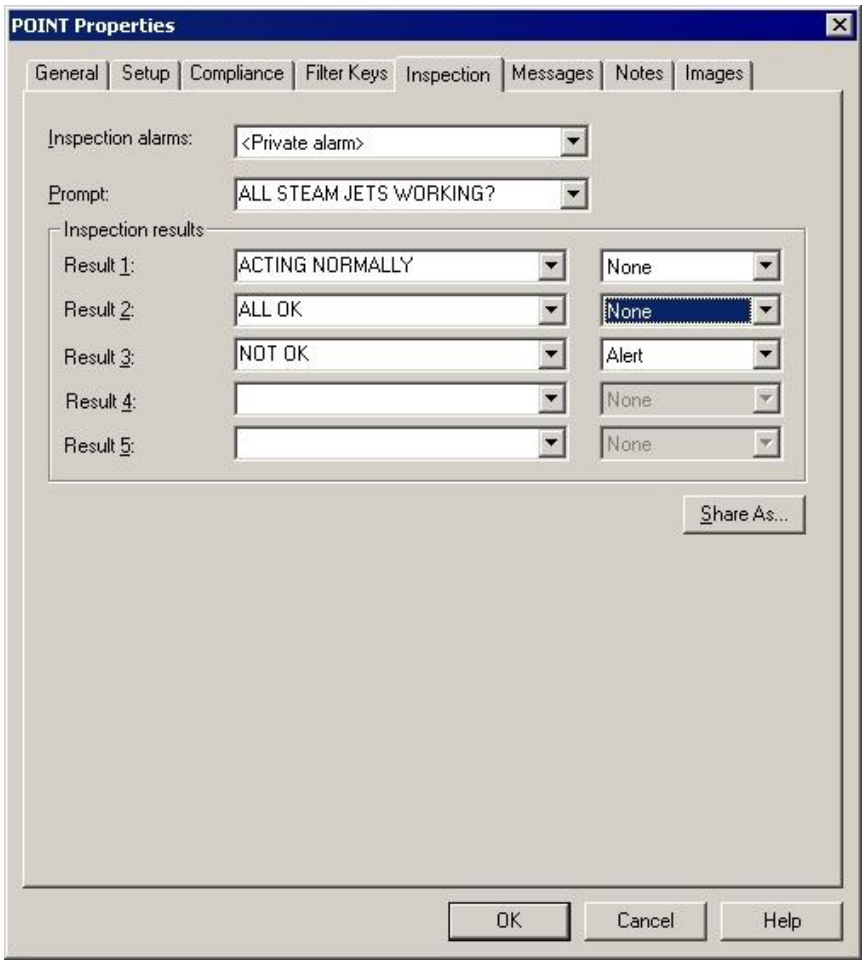


Figure 2 - 9.
The **POINT Properties** Dialog's **Inspection** Tab.

Inspection POINT Configuration

Inspection tab fields include:

Inspection Alarms - Drop-down list contains all user-defined **Inspection Alarms**. If desired, select a previously created **Inspection Alarm** to assign to the POINT.

Prompt - Enter the Inspection Prompt (limit 30 characters).

Inspection Results - Enter up to five possible inspection results by placing the cursor in the drop down list (these drop down lists also act as editable text boxes with a limit of 15 characters), or select a previously entered Inspection result from the drop-down list (if previously configured Inspection results are specified as "shared" alarms).

For every **Result** defined, select the appropriate alarm condition from the drop-down list on the right. Options include **None, Alert**, and **Danger**.

Share As - Click to save the current conditions as a shared alarm. The **Share As** dialog displays.

Sharing Inspection Alarms

Alarms initially created as private alarms may be converted into shared alarms. To share a newly created Private alarm, select the new Private alarm and click the tab's **Share As** button.

When the **Enter Name** dialog displays, you will be prompted to give the shared alarm a unique name for easy identification.

- Enter a name for the shared alarm.

The new shared alarm now appears as an available selection in the drop-down list.

Editing Inspection POINT Setups

IMPORTANT – Modifying inspection POINT Prompts and Inspection results for existing POINTs modifies any existing POINT data associated with the POINT. The Inspection POINT editing feature should only be used for Inspection Result and Prompt clarification or error corrections (typos), not to modify the meaning of the labels or the alarm results associated with each Inspection result.

If you wish to edit the inspection POINT, click to enable the **Allow edits anyway** checkbox. Once enabled, the fields become active, allowing you to make necessary edits.

> ➢ The **Allow edits anyway** check box only appears if the **Modify Inspection Alarm** option in the user's Access Level settings is set to **Allow**.

- Click the **OK** button to save your edits.

Setup Tab –Derived POINTs

A derived POINT provides data from an operator created formula that uses previously collected measurement POINT data in its calculation.

Prior to setting **Setup** tab options, use the **DAD / POINT Type Selection** dialog's setup fields to specify a derived POINT type.

To specify a derived POINT type:

- Select the **Insert** menu's **New POINT** option. The **DAD / POINT Type Selection** dialog displays.
- Select the **DAD type** field's **Derived POINT** option.
- Select the **Sensor** field's **MARLIN / Microlog Inspector** option. Note that for Microlog Inspector / MARLIN DADs, derived POINT data is downloaded to the unit. The **MARLIN / Microlog Inspector** setting indicates that POINT data used in a derived POINT calculation is first calculated in the unit and then uploaded to @ptitude Inspector.

  > ➢ For Derived POINTs, the **DAD / POINT Type Selection** dialog's **Application** field defaults to **General**, and the **Units** field defaults to **Any Units**.

Setup Tab Options

Enter Derived POINT Setup information in this tab. A Derived POINT consists of an operator created formula (expression) using measurement POINT data (variables), fixed numbers (constants; i.e., Pi) and mathematical functions (i.e., sin).

- Not all derived POINT calculations are supported by the Microlog Inspector / MARLIN.

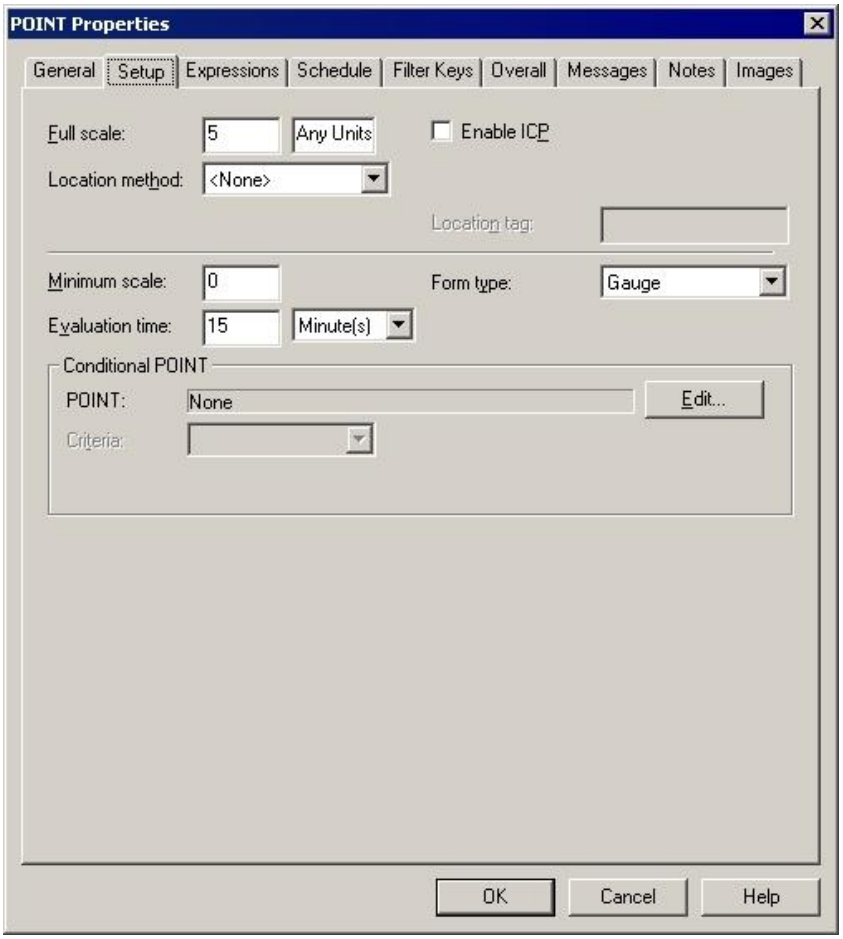


Figure 2 - 10.
The **POINT Properties** Dialog's **Setup** Tab for Derived POINTs.

If **Setup** units allow editing, the values display in an edit field.

- The POINT Setup Validation Dialog launches when you enter incompatible or erroneous information on the **Setup** tab.
- Reference the **POINT Setup Validation** section later in this manual for more information.

POINT Properties / Setup fields may include:

Full Scale - Enter a number to define the anticipated maximum amplitude to be measured for this POINT.

Enable ICP - Click to enable the data manager to provide power to the sensor.

Minimum Scale - Enter the minimum value to display on the input display (may be positive, negative, or zero).

Evaluation time – Ensures relevant variable data. Defines the maximum time range during which all variables (POINTs) must collect measurement data for the derived POINT to calculate. All variables in the expression formula must have data collected within this specified time range, or the derived POINT does not calculate. For example, if the Evaluation time is set to 15 minutes, all variables must be collected within 15 minutes of each other.

Location Method - Options include **None**, or **Barcode/RFID**. From the drop down list, select the appropriate **Location Method** for the POINT.

Location Tag - Enter a unique identifier that links the POINT to a specific machine location, such as the MQC-ID, or the barcode number.

Form Type - Options include **Bar**, **Gauge**, **Keypad**, or **Slider**. Select the desired data input display type.

Expressions Tab (Derived POINTs)

- The **POINT Properties** / **Expressions** tab displays when the Derived POINT type is selected. Use this tab to create or edit expressions for the derived POINT's **Expression formula** (the derived POINT's calculation).

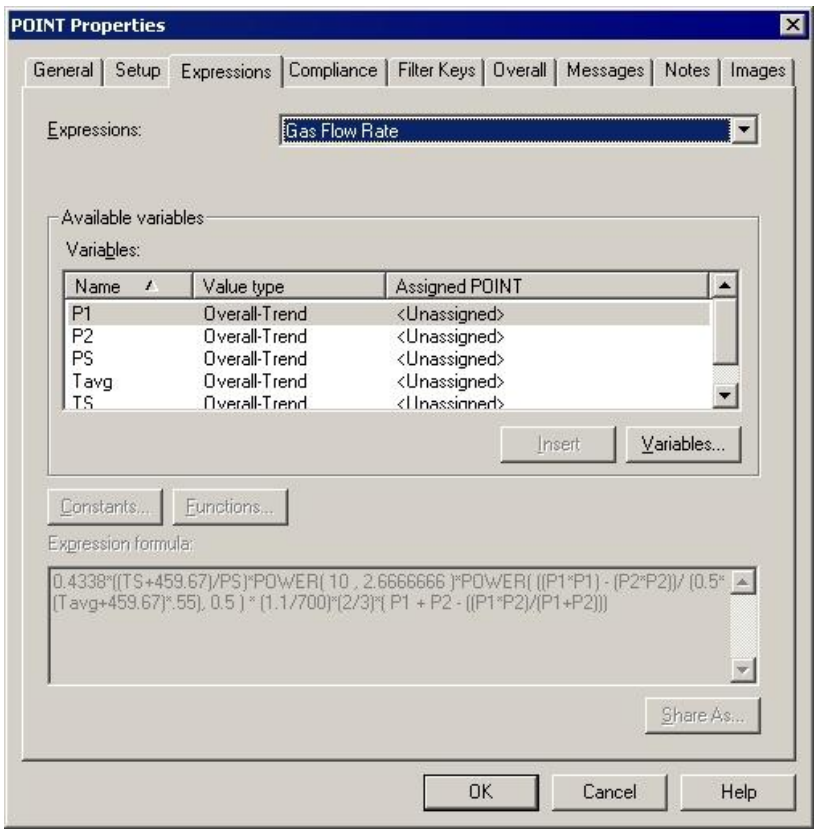


Figure 2 - 11.
The **POINT Properties** Dialog's **Expressions** Tab for Derived POINTs.

The **Expressions** drop down list displays all previously created "shared" expressions formulas (calculations) and a **<Private Expression>** option. Use this drop down list to specify whether you wish to set up a unique **<Private Expression>** for the current derived POINT only, or specify a previously defined "shared" expression formula (selected by name). If you specify a shared expression, its settings display in subsequent fields.

- Specify either a shared or Private Expression and proceed to configure the tab's expression settings as described below.

Assigning Variables

POINTs used in the derived POINT's calculation are identified as "variables." Assigned variables list in the **Available Variables** area.

To assign variables for a derived POINT:

- Click the **Variables** button. The **Variable**s dialog displays.

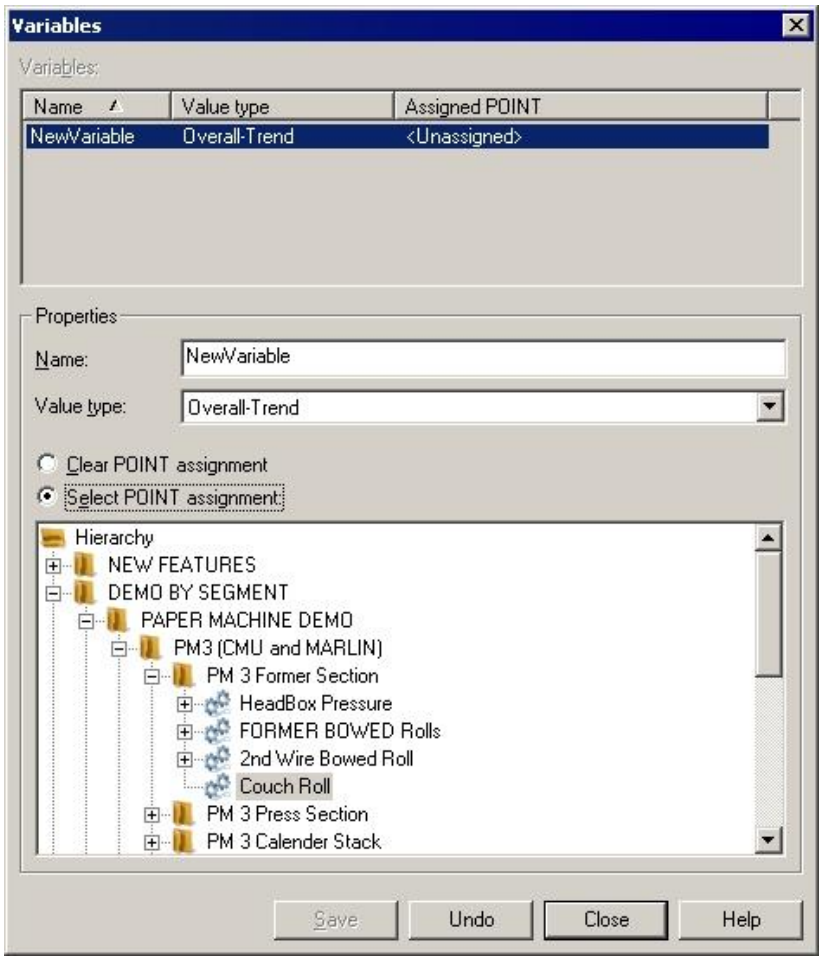


Figure 2 - 12.
The **Variables** Dialog.

- In the **Variables** dialog, click the **Add** button. The **Variables** area displays the **New Variable** with an "unassigned POINT." The **Properties** area also displays the **New Variable**.

- Click the **Select POINT assignment** option button to activate the hierarchy, allowing you to select the POINT to assign to the new variable.
    - Click the **Clear POINT assignment** option to clear the point assigned to the selected variable. Once cleared, **<Unassigned>** displays in the **Assigned POINT** column in the **Variables** list.
- In the hierarchy, select the POINT to assign to the variable.
- In the **Properties** area, type in a name for the new variable. Tip - you may use the same name as the POINT ID.
- Specify the **Value type** as **Overall-Trend, Inspection Result** for Inspection POINTs**,** or the type of **MCD POINT** for MCD POINTs.
- Click the **Save** button to save the new variable. Its information displays in the **Variables** area. Repeat the process to **Add** all necessary variables.
    - You may click the **Remove** button to remove a variable from the **Variables** list for the current derived POINT.
- When finished adding variables, click the **Close** button to return to the **POINT Properties** / **Expressions** tab. The new variables display in the **Available Variables** area.

Once variables have been created for the derived POINT, you can create the POINT's expression formula (calculation). Enter the calculation in the **Expression formula** entry box. An expression formula must contain at least one variable, and may also contain constants and functions. Insert mathematical operators (e.g., +, -, /, *) as necessary.

To insert a variable to the expression formula:

- In the **Expression Formula** area, position the cursor where you wish to insert the variable.
- Select a variable from the **Variables** list and click the **Insert** button. The selected variable appears as part of the expression formula.

To add a constant to the expression formula:

- In the **Expression formula** field, position the cursor where you would like to insert the constant.
- Click the **Constants** button to display the **Constant** dialog.
- Select a constant from the list of available constants (or create a new constant by clicking the **Add** button).

Figure 2 - 13.
The **Add Constant** Dialog**.**

- Click **OK.** The selected constant appears at the cursor position.

To add a function to the expression formula:

- Place the cursor in the **Expression formula** section where you wish to insert the function and click the **Functions** button. The **Functions** dialog displays.

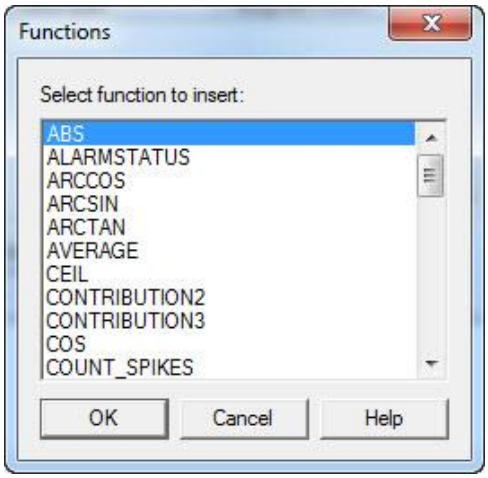


Figure 2 - 14.
The **Functions** Dialog.

- Select a function from the dialog and click **OK**. The selected function is entered at the cursor position in the **Expression formula** section along with the type of input data that is used for the function, shown in parentheses; for example: **AVERAGE(<Variable>, <Length>)**.
- Highlight the input data placeholder (e.g., **<Variable>**) and enter the applicable data, or select a constant to enter by using the **Constants** button. You can also enter a variable by selecting it from the **Variables** section and clicking **Insert**.

  ➢ To calculate more complex formulas, you can enter multiple functions within a single expression formula.

Depending on the function, the type of input data can either be *scalar* data or *dynamic* data.

Scalar data can be derived from:

- Overall trend data from a Microlog Analyzer, Microlog Inspector/MARLIN, WMx/WVT, DMx, IMx, LMU/CMU/TMU
- Inspection results (the calculated formula for inspection results will produce a result of either 0 (not valid) or 1 (valid) based on the inspection result that is entered)
- Manual entry
- Data from XML import (from sources such as the SKF Wireless Machine Condition Sensor, third party developments, etc.)
- OPC from other systems (Digital Control Systems (DCS), Canary Labs and other data historians, etc.)
- Oil Analysis / Trend Oil
- MCD (Enveloped Acceleration, Velocity, or Temperature)

- WMCD
- Derived POINTS themselves

Dynamic data includes:

- Time waveform data
- FFT data

The table below contains a list of the different functions that you can use for an expression formula, along with a description of the function and whether the function is based on scalar or dynamic data.

Function	Description	Type of data
ABS(<Variable>)	Calculates the absolute value of the **<Variable>** entered.	Scalar
ALARMSTATUS (<Variable>)	Determines and stores the current alarm status for the **<Variable>** (POINT) entered. Notice that this function does not re-evaluate past alarm conditions and therefore must be operated immediately when new alarm conditions are set for the **<Variable>**. Returned values are: -1 No alarm level (when the **<Variable>** has no values, no set alarm) 0 Safe 1 Alert 2 Danger	Scalar Dynamic
ARCCOS(<Radians>)	Calculates the arc cosine of the **<Radians>** value entered. The value returned is in degrees.	Scalar
ARCSIN(<Radians>)	Calculates the arc sine of the **<Radians>** value entered. The value returned is in degrees.	Scalar
ARCTAN(<Radians>)	Calculates the arc tangent of the **<Radians>** value entered. The value returned is in degrees.	Scalar
AVERAGE(<Variable>, <Length>)	Calculates the average of the **<Variable>** entered using a sliding window of **<Length>** values entered.	Scalar
AVERAGE(<Dynamic Variable>,<Channel Number>)	Calculates the average of the **<Dynamic Variable>** entered for the specified **<Channel Number>**. For non-multi-channel measurements, **<Channel Number>** should be set to 1.	Dynamic
CEIL(<Param>)	Calculates the smallest (closest to negative infinity) integer that is not smaller than the **<Param>** value.	Scalar
CONTRIBUTION2 (<Dynamic Variable>, <Speed Multiple>)	Calculates the contribution (in percentage) of the energy periodical to the **<Speed Multiple>** entered. The **<Dynamic Variable>** entered is the time waveform. The **<Speed Multiple>** is specified in multiples of running speed including fractional values.	Dynamic (best for time waveform data)
CONTRIBUTION3 (<Dynamic Variable>, <Speed Multiple>, <Ref Speed>)	Calculates the contribution (in percentage) of the energy periodical to the **<Speed Multiple>** entered. The **<Dynamic Variable>** entered is the time waveform. The **<Speed Multiple>** is specified in multiples of running speed including fractional values. The **<Ref Speed>** entered is the machine speed value to use. The **<Ref Speed>** may be a fixed value, an overall value from a trend, or a speed value extracted with Speed() from a time waveform or spectrum.	Dynamic (best for time waveform data)
COS(<Radians>)	Calculates the cosine of the **<Radians>** value entered.	Scalar

Function	Description	Type of data
COUNT_SPIKES (<Dynamic Variable>, <Channel Number>, <Threshold>, <DC>)	Counts the number of spikes in the waveform indicated by the **<Dynamic Variable>** entered for the specified **<Channel Number>** entered. A spike is defined as a signal level equal or higher than the **<Threshold>** value entered. The **<DC>** bias value entered is subtracted from the signal prior to evaluation against the threshold value. Use the **Average** function to de-trend signals with strong **DC** bias i.e.: *COUNT_SPIKES(<Dynamic Variable>, <Channel Number>, <Threshold>, AVERAGE(<Dynamic Variable>, <Channel Number>))* For non-multi-channel measurements, **<Channel Number>** should be set to 1.	Dynamic (best for time waveform data)
CRESTFACTOR (<Dynamic Variable>)	Calculates the crest factor. The crest factor is defined as the time waveform's Peak value divided by its RMS value. The **<Dynamic Variable>** entered is the time waveform. The resulting value is dimensionless.	Dynamic (best for time waveform data)
CTA_PK_PK(<Waveform Data>, <Speed Multiple>)	Calculates the Cyclic Time Average of a time waveform using the **<Speed Multiple>** averaging period. The **<Waveform Data>** entered is the time waveform. The **<Speed Multiple>** entered must be in seconds. The returned value is in the same engineering units as the **<Waveform Data>** and Peak to Peak detection type.	Dynamic (best for time waveform data)
CTA_RMS(<Waveform Data>, <Speed Multiple>)	Calculates the Cyclic Time Average of a time waveform using the **<Speed Multiple>** averaging period. The **<Waveform Data>** entered is the time waveform. The **<Speed Multiple>** entered must be in seconds. The returned value is in the same engineering units as the **<Waveform Data>** and RMS detection type.	Dynamic (best for time waveform data)
CUSUM(<Variable>, <Variable>)	Calculates the cumulative difference of the first **<Variable>** entered against the second **<Variable>** entered.	Scalar
DEGTORAD(<Degrees>)	Converts the angle **<Degrees>** value entered to radians.	Scalar
DELTATIME(<Variable>)	Calculates the difference in seconds between two adjacent measurements.	Scalar Dynamic
DELTAVALUE(<Variable>)	Calculates the difference in value between two adjacent measurements.	Scalar
ENERGY_VALUE (<Dynamic Variable>, <Band Number>)	Calculates the overall energy found in the specified **<Band Number>** frequency band. **<Band Number>** starts at 1. Returns zero when no frequency band exists for the specified **<Band Number>**. Returns a band overall energy value with the same units and detection type as the **<Dynamic Variable>** entered.	Dynamic (best for FFT data)
FLOOR(<Param>)	Calculates the largest (closest to positive infinity) integer that is not greater than the **<Param>** value.	Scalar
FORECAST_EXP (<Variable>, <Length>, <Length>)	Calculates a forecasted alarm, in days, of the **<Variable>** entered using a sliding window of specified **<Length>** values. Uses an exponential fitting function.	Scalar
FORECAST_LIN (<Variable>, <Length>, <Length>)	Calculates a forecasted alarm, in days, of the **<Variable>** entered using a sliding window of specified **<Length>** values. Uses a linear fitting function.	Scalar
HAL(<Dynamic Variable>, <Speed Multiple>)	Calculates the Harmonic Activity Index for the frequency specified by the **<Speed Multiple>** entered in the **<Dynamic Variable>** entered. The **<Speed Multiple>** must be in orders. The returned value is a dimensionless indicator of the likelihood that a harmonic pattern at the **<Speed Multiple>** exists.	Dynamic (best for FFT data)

Function	Description	Type of data
KURTOSIS(<Variable>, <Length>)	For overall measurements, calculates the Kurtosis of excess for the **<Variable>** entered using a sliding window of specified **<Length>** values. There should be at least three measurements in the POINT referenced by the **<Variable>**.	Scalar
KURTOSIS(<Dynamic Variable>, <Channel Number>)	Calculates the standard deviation of a dynamic signal (FFT or waveform) for the specified <**Channel Number**> entered. For non-multi-channel measurements, <**Channel Number**> should be set to 1.	Dynamic
LN(<Param>)	Calculates the natural logarithm of the **<Param>** value entered.	Scalar
LOG(<Param>)	Calculates the logarithm of the **<Param>** value entered.	Scalar
MAX(<Variable>, <Variable>)	Calculates the maximum value between each **<Variable>** entered. Returns the appropriate **<Variable>**.	Scalar
MIN(<Variable>, <Variable>)	Calculates the minimum value between each **<Variable>** entered. Returns the appropriate **<Variable>**.	Scalar
MOD(<Param>, <Param>)	Calculates the remainder after the division of the first **<Param>** value entered by the second **<Param>** value entered; for example: *MOD(7, 3) = 1*.	Scalar
Operating Time	This function is available only by selecting "Operating Time" for Application Type when creating the POINT. It computes the amount of time an asset has been operative in the time unit specified in the create POINT dialog.	Scalar
PEAK_VALUE(<Dynamic Variable>, <Band Number>)	Calculates the peak value found in the specified **<Band Number>** frequency band. **<Band Number>** starts at 1. Returns zero when no frequency band exists for the specified **<Band Number>**. Returns a peak value with the same units and detection type as the **<Dynamic Variable>** entered.	Dynamic (best for FFT data)
PERCENTCHANGE (<Variable>)	Calculates the percentage change between two adjacent measurements. What is computed is: *(Value – PreviousValue) / PreviousValue*.	Scalar
POWER(<Base>, <Exponent>)	Raises the **<Base>** entered to the power of the **<Exponent>** entered.	Scalar
ROC(<Variable>, <Days Multiple>)	Calculates the rate of change (in days) between two adjacent measurements.	Scalar
ROUND(<Param>)	Calculates the integer closest to the **<Param>** value.	Scalar
SIN(<Radians>)	Calculates the sine of the **<Radians>** value entered.	Scalar
SKEW(<Variable>, <Length>)	Calculates the skew for the **<Variable>** entered using a sliding window of specified **<Length>** values. There should be at least four measurements in the POINT referenced by the **<Variable>**.	Scalar
SKEW(<Dynamic Variable>, <Channel Number>)	Calculates the skew of a dynamic signal (FFT or waveform) for the specified <**Channel Number**>. For non-multi-channel measurements, <**Channel Number**> should be set to 1.	Dynamic
SMAX(<Dynamic Variable>)	Calculates the maximum vector magnitude of an Orbit. The **<Dynamic Variable>**value entered must refer to a 2 channel time waveform value.	Dynamic (best for time waveform data)
SPEED(<Dynamic Variable>)	Extracts the machine speed from the **<Dynamic Variable>** entered. The **<Dynamic Variable>** must be either a time waveform or spectrum. The returned value is in Hertz.	Dynamic
SQRT(<Param>)	Calculates the square root of the **<Param>** value entered.	Scalar
STDEV(<Variable>, <Length>)	Calculates the standard deviation of the **<Variable>** entered using a sliding window of specified **<Length>** values. There should be at least two measurements in the POINT referenced by the **<Variable>**.	Scalar

Function	Description	Type of data
STDEV(<Dynamic Variable>, <Channel Number>)	Calculates the standard deviation of a dynamic signal (FFT or waveform) for the specified <**Channel Number**>. For non-multi-channel measurements, <**Channel Number**> should be set to 1.	Dynamic
SUMDURATION (<Variable>, <Duration>)	Enter any number of days (for example: 1, 7, 31, etc.) or partial days (for example: 0.5, 3.5, 11.75, etc.) for **<Duration>**. This function sums the **<Variable>**'s (POINT's) last measurement with all of its previous measurements found within the specified number of days (or partial days) prior to the last measurement date/time. Sample cases: Enter a **<Duration>** of 7 to sum the **<Variable>**'s (POINT's) last measurement with all of its previous measurements starting exactly 7 days prior to the last measurement. Enter a **<Duration>** of 3.5 to sum the **<Variable>**'s (POINT's) last measurement with all of its previous measurements starting exactly 3 and one half days prior to the last measurement.	Scalar
SUMPERIOD(<Variable>, <Period>)	Enter a specific **<Period>** (defined in sample cases, below). This function sums the **<Variable>**'s (POINT's) last measurement with all of its previous measurements found within the specified **<Period>** and stamps the result with the period start date/time. SUMPERIOD differs from the other functions in that it always creates a measurement at the start of a period as soon as it begins, even when the source **<Variable>** (POINT) has not yet collected a measurement. The initial value is 0, and will be updated as the source **<Variable>** (POINT) collects measurements for that period. Sample cases: Enter a **<Period>** of **Period_Hour** to sum the Variable's (POINT's) last measurement with all of its previous measurements within the same hour, starting at the top of the hour (for example 08:00 AM). Alternatively, you can enter the constant **1** as the **<Period>** value to represent Period_Hour. Enter a **<Period>** of **Period_Day** to sum the Variable's (POINT's) last measurement with all of its previous measurements found within the same day, starting at 12:00 AM. Alternatively, you can enter the constant **2** as the **<Period>** value to represent Period_Day. Enter a **<Period>** of **Period_Week_Sunday** to sum the Variable's (POINT's) last measurement with all of its previous measurements found within the same week, starting Sunday at 12:00 AM. Alternatively, you can enter the constant **3** as the **<Period>** value to represent Period_Week_Sunday. Enter a **<Period>** of **Period_Week_Monday** to sum the Variable's (POINT's) last measurement with all of its previous measurements found within the same week, starting Monday at 12:00 AM. Alternatively, you can enter the constant **4** as the **<Period>** value to represent Period_Week_Monday.	Scalar

Function	Description	Type of data
	Enter a **<Period>** of **Period_Month** to sum the Variable's (POINT's) last measurement with all of its previous measurements found within the same month, starting the first day of the month at 12:00 AM. Alternatively, you can enter the constant **5** as the **<Period>** value to represent Period_Month. Enter a **<Period>** of **Period_Quarter** to sum the Variable's (POINT's) last measurement with all of its previous measurements found within the same quarter, starting Jan 1, Apr 1, Jul 1, or Oct 1 at 12:00 AM. Alternatively, you can enter the constant **6** as the **<Period>** value to represent Period_Quarter. Enter a **<Period>** of **Period_Year** to sum the Variable's (POINT's) last measurement with all of its previous measurements found within the same year, starting Jan 1 at 12:00 AM. Alternatively, you can enter the constant **7** as the **<Period>** value to represent Period_Year.	
SUMSINCE(<Variable>, <Start Date>)	Enter any **<Start Date>** code (using the format *yyyymmdd* or, optionally, *yyyymmddhhmmss*). This function sums all of the **<Variable>**'s (POINT's) measurements found on or after the specified date/time. Sample cases: Enter a **<Start Date>** of **20140101** to sum all of the Variable's (POINT's) measurements found on or after Jan 1, 2014 at 12:00 AM. Enter a **<Start Date>** of **20140101090000** to sum all of the Variable's (POINT's) measurements found on or after Jan 1, 2014 at 09:00 AM.	Scalar
TAN(<Radians>)	Calculates the tangent of the **<Radians>** value entered.	Scalar
Total Operating Time	This function is available only by selecting "Operating Time" for Application Type when creating the POINT. It computes the total amount of time an asset has been operative in the time unit specified in the create POINT dialog.	Scalar Dynamic
TRUNC(<Param>)	Removes any fractional part from the **<Param>** value entered.	Scalar
XMAG(<Dynamic Variable>, <Channel Number>, <Channel Number>, <Speed Multiple>)	Computes the cross magnitude value (as opposed to cross phase) between two time waveform signals. The waveform signals are referenced by the **<Dynamic Variable>** entered and either of the specified **<Channel Number>** values. The specific frequency the cross magnitude value is computed for is determined by the speed value associated with the measurement and the **<Speed Multiple>** value entered: *f = 1 / (s * Speed Multiple)*. This function operates on multi-channel measurements only.	Dynamic (best for time waveform data)

Function	Description	Type of data
XPHASE(<Dynamic Variable>, <Channel Number>, <Channel Number>, <Speed Multiple>)	Computes the cross phase value (as opposed to cross magnitude) between two time waveform signals. The waveform signals are referenced by the **<Dynamic Variable>** entered and either of the specified **<Channel Number>** values. The specific frequency the cross phase value is computed for is determined by the speed value associated with the measurement and the **<Speed Multiple>** value entered: *f = 1 / (s * Speed Multiple).* This function operates on multi-channel measurements only.	Dynamic (best for time waveform data)

- The value entered for the SIN, COS, and TAN functions must be in radians, not degrees. If the value entered is in degrees, the @ptitude Inspector will assume it is in radians, and the calculation will be wrong.
  To convert degrees to radians, use the DEGTORAD function in the formula. For example, if you have a value of 45 degrees, the entered formula may look like this:
  SIN(DEGTORAD(45))
  When the formula is calculated, 45 degrees is automatically converted into radians.
- Use the DeltaTime function to calculate the difference in seconds between the two most recent measurements for that POINT.
- Use the DeltaValue function to calculate the difference in value between the two most recent measurements for that POINT.
- Use the PercentChange function to calculate the percent change between the two most recent measurements for that POINT. The formula will look like this:
  (LastValue – PreviousValue) / PreviousValue

Important – After initial setup of a derived POINT that references variables (POINTs) with existing data records, you must manually calculate the derived POINT to immediately acquire derived POINT data based upon the variable POINTs' historical data records. Reference the Calculating Derived POINTs section later in this chapter for details.

Share As

- Click **Share As** to make the expression a shared expression. The **Enter Name** dialog displays.
- Enter a name for the shared expression and click **OK**.

The new shared expression now appears as an available selection in the dialog's drop down list. Shared expressions are easily assigned to other POINTs to simplify setup and maintenance.

MCD Tab

Configure MCD alarms in this tab.

Figure 2 - 15.
The **POINT Properties** Dialog's **MCD** Tab.

MCD tab fields include:

MCD Alarms: - Drop-down list contains all user-defined **MCD Alarms**. If desired, select a previously created **MCD Alarm** to assign to the POINT.

Settings

Specify your **Env. Acceleration**, **Velocity**, and **Temperature** alarm values.

Danger High - Enable checkbox to set. Enter the numerical danger alarm value.

Alert High - Enable checkbox to set. Enter the numerical alert alarm value.

Share As - Click to save the current conditions as a shared alarm. The **Share As** dialog displays.

Sharing MCD Alarms

Alarms initially created as private alarms may be converted into shared alarms. To share a newly created Private alarm, select the new Private alarm and click the tab's **Share As** button.

When the **Share As** dialog displays, you will be prompted to give the shared alarm a unique name for easy identification.

- Enter a name for the shared alarm and click the **OK** button.

The new shared alarm now appears as an available selection in the drop-down list.

Setup Tab (Manual POINTs)

➢ The **POINT Properties / Setup** tab displays differently, depending on the POINT type. The following **Setup** fields apply to POINTs defined with a manual sensor.

Enter Manual POINT Setup information in this tab.

Figure 2 - 16.
The **POINT Properties** Dialog's Manual **Setup** Tab.

POINT Properties / Setup fields may include:

- The POINT Setup Validation Dialog launches when you enter incompatible or erroneous information on the **Setup** tab. Reference the **POINT Setup Validation** section later in this manual for more information.

Full Scale – Enter a number to define the measurement's maximum amplitude value.

The **Units** selected on the **DAD/POINT Type Selection** dialog display next to the **Full Scale** field. If **Any Units** was selected, the units may be edited. Adjust the units if necessary.

Compliance Tab

Use the **Compliance** tab to enter data collection and archiving scheduling information.

@ptitude Inspector allows you to archive collected data using its **Scheduler** feature, its **Monitor** application, or **Manually**. To archive with Analyst's Scheduler wizard or with the Monitor application, you must set archive parameters in the **POINT Properties / Compliance** tab and in the Scheduler wizard or Monitor application respectively.

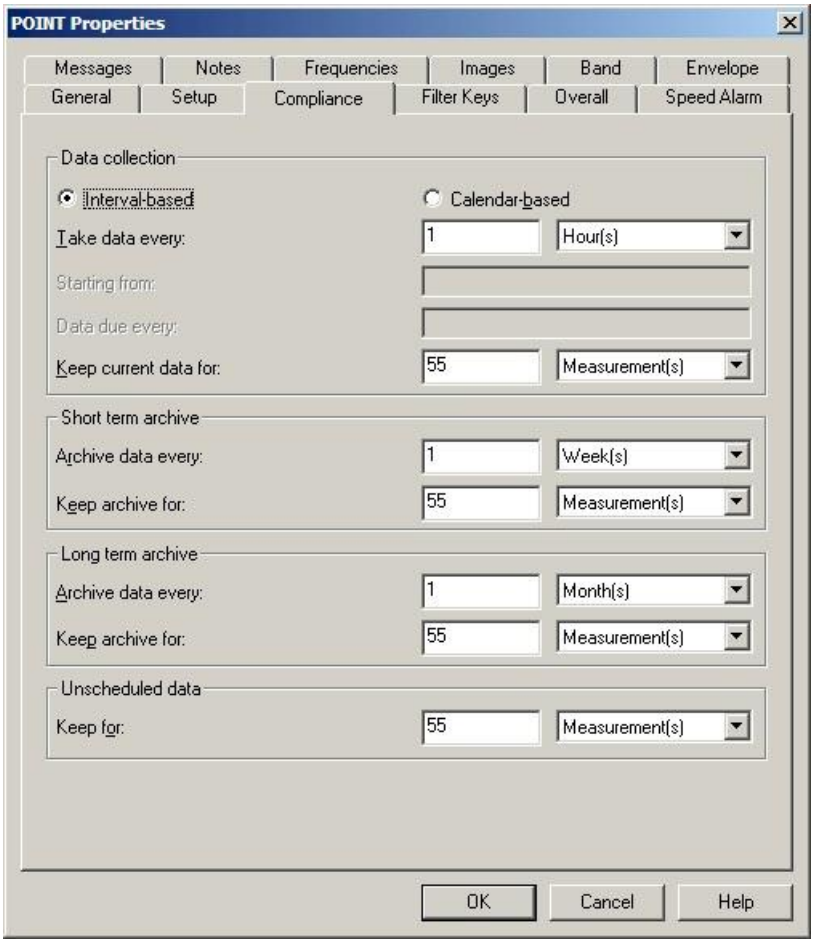


Figure 2 - 17.
The **POINT Properties** Dialog's **Compliance** Tab – Interval-Based.

- **IMPORTANT - Keep current data for, Short term archive,** and **Long term archive** settings operate ONLY with the **Scheduler's** archive process or when using the **Monitor** application's archive feature. They do not apply to Manual archives.

Data collection specifies the POINT's data collection schedule, and the overdue for collection status.

The **Compliance** tab has two modes:

Interval-based – Select **Interval-based** if you wish to schedule data collection at a set time interval.

Calendar-based – Select **Calendar-based** if you wish to schedule data collection based on a calendar date and time. Calendar-based schedules are set up in the **Customize** / **Database**'s **Compliance** dialog.

Interval-based fields include:

Take data every – Enter a numerical value to indicate how often data should be collected and select the appropriate units from list box options (**Second(s), Minute(s), Hour(s), Day(s)**). The POINT is tagged as overdue for data collection if the time range between the current date (today) and the last data collection date is longer than the specified **Take data every** setting.

- The **Take data every** field is used to determine if a POINT is overdue for data collection.

Keep current data for – Enter a value to indicate how long to keep (store) the measurement record in the hierarchy's "current data" bin and select the appropriate units (**Wk(s), Mo(s), Yr(s)**). When the specified time from data collection elapses, and a Scheduled or Monitor archive process is performed, the measurement is typically moved from the "current data" bin into the "short term archive" bin (or discarded) as specified in the **Short term archive / Archive data every** field.

- The **Keep current data for** field determines the length of time a measurement is kept before it is archived.

Example - Using a data manager, you may select to **Take data every** <30 days> and **Keep current data for** <1 Yr>. If you use Analyst's **Scheduler** feature to schedule an archiving process every month, no archiving will take place for the first year. After the first year, on a monthly basis, all measurement records in the "current data" bin whose date / timestamp is older than 1 year from the current date will either be placed in the "short term archive" bin (if short term criteria are met) or discarded.

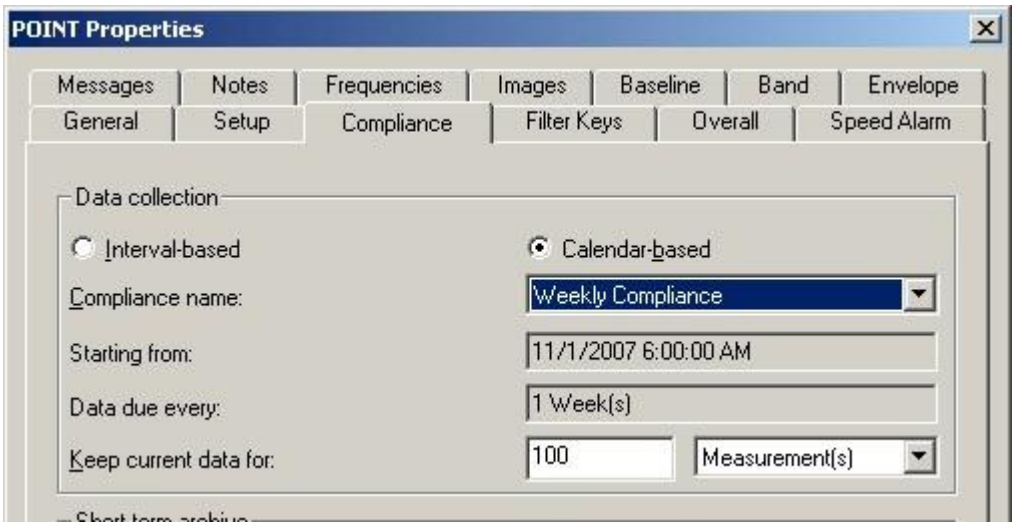


Figure 2 - 18.
The **POINT Properties** Dialog's **Compliance** Tab – Calendar-Based.

Calendar-based fields include:

Compliance name – Select a pre-configured compliance schedule from the drop down list.

- Create and edit compliance schedules on the **Customize** / **Database** / **Compliance** tab. Reference **Chapter 3's Customize / Database Operations** section for details.

Starting from – Displays the initial start date / time of when the data collection interval is scheduled.

Data due every – Displays the frequency of when the scheduled data collection is due. The POINT becomes overdue if data collection does not take place within the scheduled interval.

Keep current data for – Enter a value to indicate how long to keep (store) the measurement record in the hierarchy's "current data" bin and select the appropriate units (**Wk(s), Mo(s), Yr(s)**). When the specified time from data collection elapses, and a Scheduled or Monitor archive process is performed, the measurement is typically moved from the "current data" bin into the "short term archive" bin (or discarded) as specified in the **Short term archive / Archive data every** field.

- The **Keep current data for** field determines the length of time a measurement is kept before it is archived.

Short term archive (optional, but typically enabled)

Fields in the **short term archive** section include:

Archive data every – Determines whether data leaving the "current data" bin is archived in the "short term archive" bin. Enter numerical value to indicate how often data leaving the "current data" bin is stored in the "short term archive" bin and select appropriate units (**Wk(s), Mo(s), Yr(s)**). As scheduled archives occur, measurements leaving the "current data" bin are accepted into the "short term archive" bin only if this **Archive data every** setting has expired

since the last measurement was stored in the "short term archive" bin. Otherwise, they are discarded.

Example - To continue with our example of a scheduled monthly archive. If we set this **Archive data every** setting to *three months*, on the 13th month of data collection, the measurement(s) leaving the "current data" bin are placed in the "short term archive" bin as there is no data yet stored in the "short term archive" bin. On months 14 and 15, measurement(s) that exceed the **Keep for** setting and leaving the "current data" bin are discarded, as three months have not expired since the last "short term archive" data was stored. On month 16, measurement(s) leaving the "current data" bin are *three months* newer than the last measurement stored in the "short term archive" bin, and are therefore stored in the "short term archive" bin. Thus, by configuring this setting to three months, you are able to "thin" the data stored in the "short term archive" bin (store short term archive data every three months instead of every month).

Keep archive for – Enter a value to indicate how long to keep (store) the measurement record in the "short term archive" bin and select appropriate units (**Wk(s), Mo(s), Yr(s)**). When the specified time of storage elapses, and a scheduled archive process performed, the measurement is typically moved from the "short term archive" bin into the "long term archive" bin (or discarded) as specified in the **Long term archive** fields.

Fields in the **long term archive** section include:

Archive data every – Determines whether data leaving the "short term archive" bin is archived in the "long term archive" bin. Enter numerical value to indicate how often data leaving the "short term archive" bin is stored in the "long term archive" bin and select appropriate units (**Wk(s), Mo(s), Yr(s)**). As scheduled archives occur, measurements leaving the "short term archive" bin are accepted into the "long term archive" bin if this **Archive data every** setting has expired since the last measurement was stored in the "long term archive" bin.

Keep archive for – Enter value to indicate how long to keep (store) the measurement record in the "long term archive" bin and select appropriate units (**Wk(s), Mo(s), Yr(s)**). When the specified time of storage elapses, and a scheduled archive process is performed, the measurement is discarded.

Unscheduled data

The last section of the tab schedules alarm data. In on-line DAD systems, alarm data is automatically placed in the "Unscheduled data" bin. This setting determines how long alarm data is stored in the alarm data bin before it is discarded. Fields include:

Keep for – Specify value to indicate the desired length of time to store alarm data and select appropriate units (**Wk(s), Mo(s), Yr(s)**). After the specified storage time elapses, the alarm data is discarded.

Filter Keys Tab

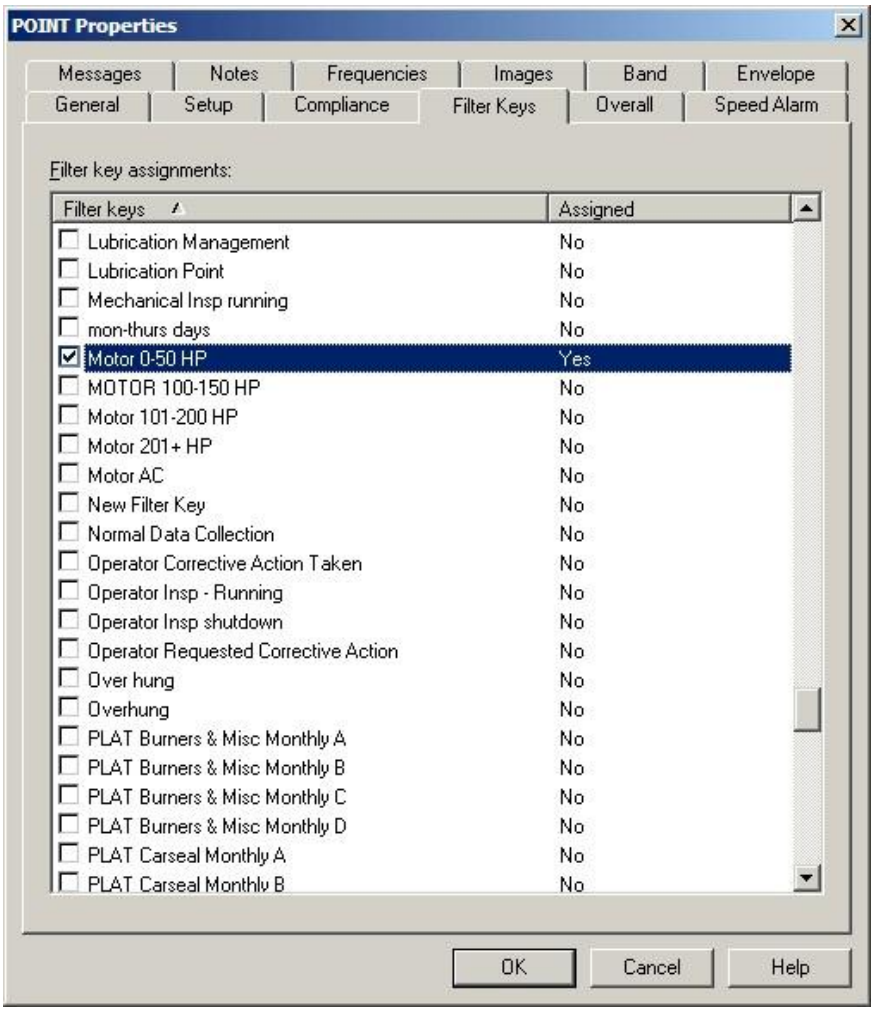


Figure 2 - 19.
The **POINT Properties** Dialog's **Filter Keys** Tab.

@ptitude Inspector allows you to create **Filter Keys** which can be associated with POINTs and Machines for automated filtering purposes. For example, if you activate a "Pump" filter key for a Group and later filter a hierarchy list using the **Filter Key / Pump**, then all Groups with active Pump filter keys display in the filtered Workspace.

- Filter key creation is discussed later in this chapter.

Filter key searches list all POINTs or Machines sharing a specified filter key (or multiple filter keys). The **Filter Key** tab lists all created filter keys and indicates whether or not they are currently assigned.

- Click a specific filter key's checkbox to associate it to the current POINT.
  - The checkbox appears gray if the filter key is enabled for a parent hierarchy item.
- Click the **Filter Key** dialog's **OK** button to save your filter key assignments.

Overall Tab

The **Overall** tab allows you to re-apply previously defined "shared" overall alarms, eliminating the need to define alarms individually, saving time and database space.

Use the **Overall** tab to set a process POINT's overall alarm settings. The alarm can be configured in a variety of ways using the **Overall** tab's fields.

The current alarm appears in the **Overall alarm** field. The current alarm's values display below in the dialog's **Properties** and **Settings** areas.

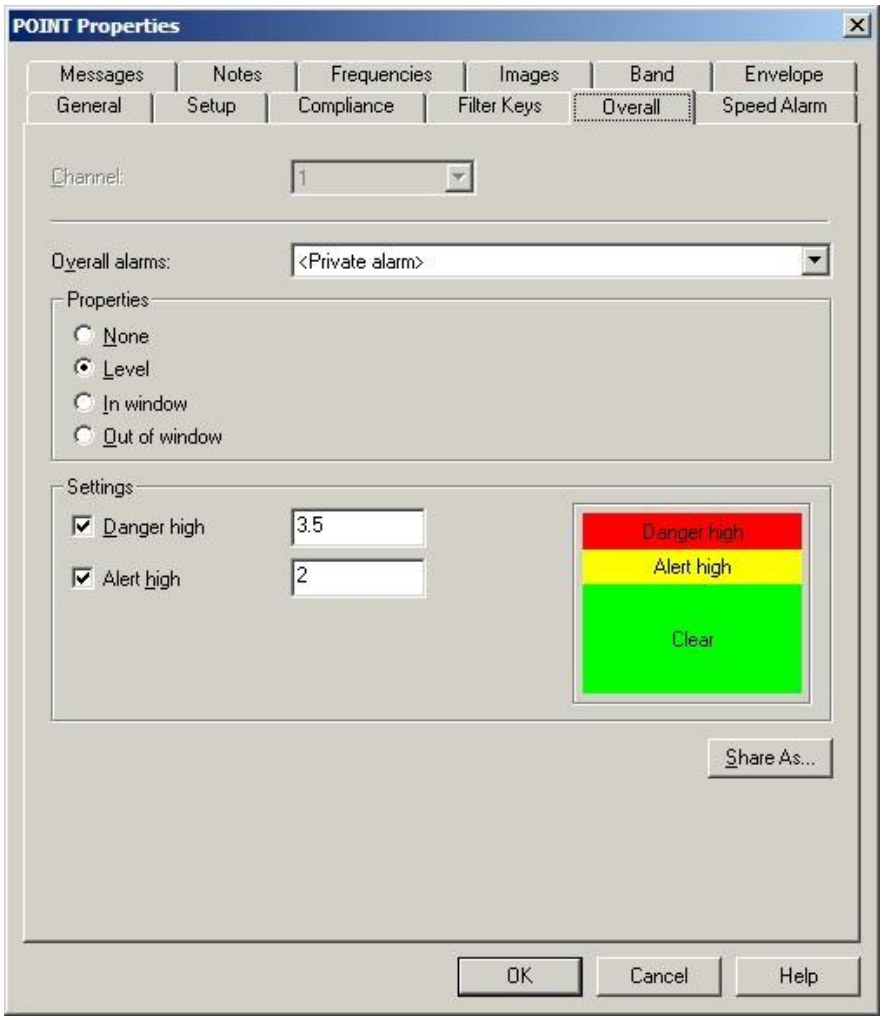


Figure 2 - 20.
The **POINT Properties** Dialog's **Overall** Tab.

The **Overall alarms** drop down list displays all previously created overall alarms and a <**Private Alarm**> option. Use this drop down list to specify whether you wish to set up a unique **<Private Alarm>** for the current POINT only, or specify a previously defined "shared" alarm (selected by name). If you specify a shared alarm, it's alarm settings automatically display in subsequent fields. If you specify a Private Alarm, proceed to configure the tab's alarm settings as described below.

The **Properties** area options relate to Alert and Danger alarm detection values specified in the **Settings** area. Select from:

None – No overall alarm is set for the POINT.

Level – Measurements *exceeding* the specified **Settings** will result in an alarm condition.

In Window – Measurements *falling within* the specified **Settings** will result in an alarm condition.

Out of Window – Measurements *falling outside* the specified **Settings** will result in an alarm condition.

To assign a shared alarm to the current POINT:

- Select the shared alarm from the drop down list and click the **OK** button. Shared alarms may be applied to an unlimited number of POINTs.

Shared Alarm

Alarms initially created as private alarms may be converted into shared alarms. To share a newly created Private alarm, select the new Private alarm and click the tab's **Share As** button.

The **Share As** dialog specifies the alarm as a shared alarm. When the **Share As** dialog displays, you will be prompted to give the shared alarm a unique name for easy identification.

- Enter a name for the shared alarm and click the **OK** button.

The new shared alarm now appears as an available selection in the drop down list. Shared alarms are easily assigned to other POINTs to simplify POINT setup and maintenance.

Messages

The **Messages** tab allows you to apply previously defined "shared" alarm messages, and to create new alarm messages for various alarm levels and pre- and post-measurement instructions.

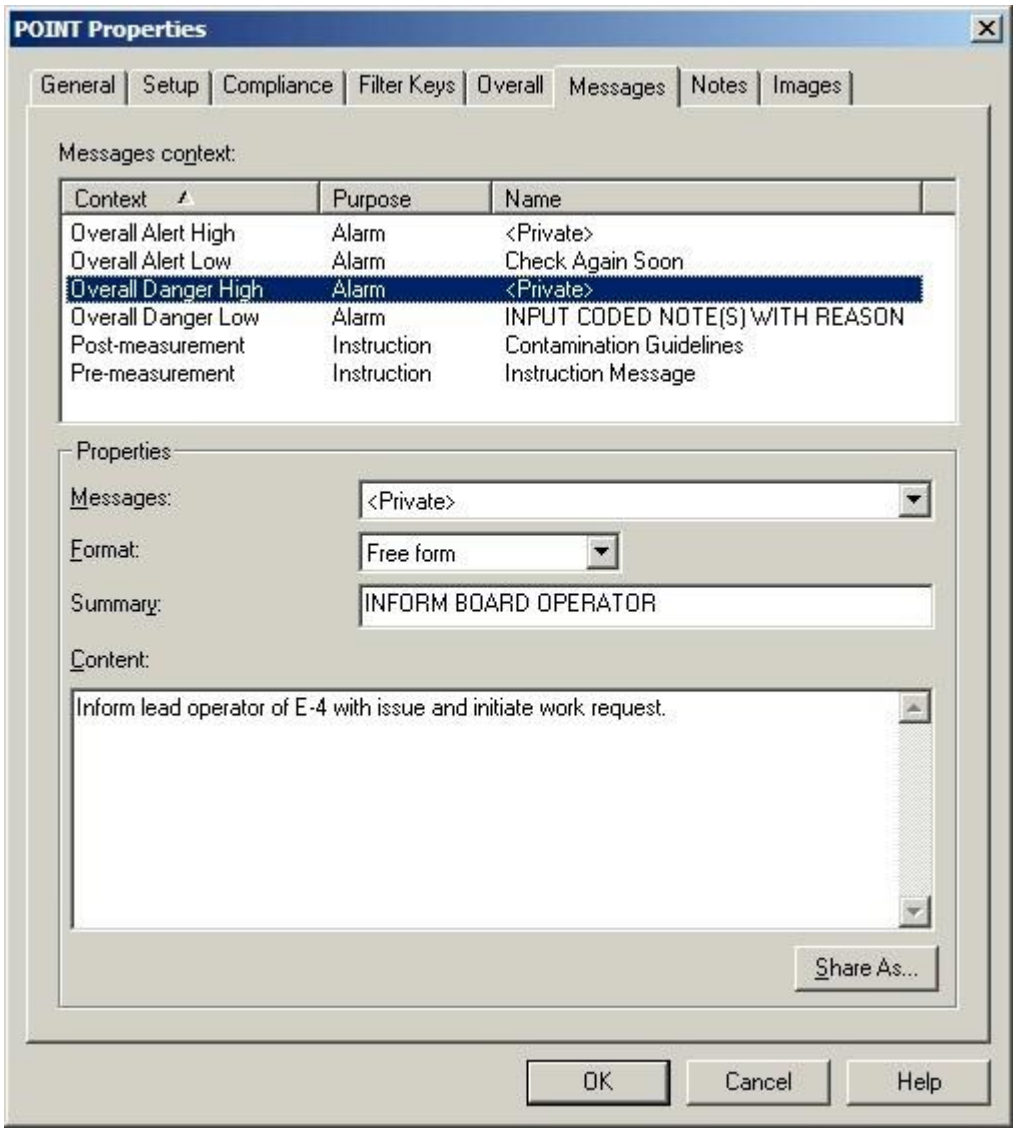


Figure 2 - 21.
The **POINT Properties** Dialog's **Messages** Tab.

@ptitude Inspector's **POINT Properties / Messages** feature allows you to create and assign up to six alarm messages for process POINTs, four corresponding to the four overall alarm levels; **Overall Alert High, Overall Alert Low, Overall Danger High,** and **Overall Danger Low,** and two for pre-measurement and post-measurement instructions. You can create up to eight alarm messages for MCD POINTs, six corresponding to the six MCD alarm levels, **MCD Env Acc Alert, MCD Env Acc Danger, MCD Temperature Alert, MCD Temperature Danger, MCD Velocity Alert, MCD Velocity Danger**, and two for pre-measurement and post-measurement instructions. The **Messages context** area displays type of messages available for assignment and

any existing alarm messages already applied. You can assign a created shared alarm message to one or more alarm levels, or create a new private alarm message and apply it to the selected POINT.

The **Name** drop down list displays all previously created alarm messages and a <**Private**> option. Use this drop down list to specify whether you wish to set up a unique **<Private>** message for the current POINT only, or specify a previously defined "shared" message (selected by name). If you specify a shared message, its format, summary, and content automatically display in subsequent fields. If you specify a Private message, proceed to configure the message settings as described below.

> ➢ For more information on creating and managing public alarm messages, refer to the **Customize / Database Operations** section later in this chapter.

Format – This drop down list allows you to specify your alarm message's format.

Free form – Allows you to manually type in the summary and content for your alarm message.

Hyperlink – Allows you to create a link to an existing file on your DAD. During data collection, when the specified message condition is met, the originating application (Word, Acrobat) launches the machine's hyperlinked message file on the unit. When the message condition occurs, an **Instruction (i)** button becomes available (un-ghosts) on the display. Tap this **Instruction (i)** button to display the message. This feature allows you to associate detailed instructions with particular POINTs while still keeping downloads small and efficient. The message file and the application used to create the message must both be present on the DAD. Message files are downloaded to the DAD using ActiveSync. Reference your ActiveSync User Manual for more information.

Summary – Type in text summarizing your alarm message for easy recognition. For example, if you have an alarm message that details shut down instructions in the case of an overall danger high alarm level, your summary may read, "Emergency Shut Down Instructions."

Content – This field allows you to specify the body of the message.

Freeform – Enter your complete alarm message in the content text area. Using the above example, your alarm message content would include detailed shut down instructions, and any other pertinent information required in the case of the triggered alarm type.

Hyperlink message – Enter the path and filename for the file you wish to associate with the message. For example, C:\\MARLIN Instructions\\FD FAN\\Data Collection Instructions.doc.

To assign a shared message to the current POINT:

- Select the shared message from the drop down list and click the **OK** button. Shared messages may be applied to an unlimited number of POINTs.

Shared Message

Alarm messages initially created as private messages may be converted into shared (public) messages. To share a newly created Private message, select the new Private message and click the tab's **Share As** button.

The **Enter Name** dialog specifies the message as a shared (public) message. When the **Enter Name** dialog displays, you will be prompted to give the shared message a unique name for easy identification.

- Enter a name for the shared message and click the **OK** button.
- The new shared message **now** appears as an available selection in the dialog's drop down list. Shared messages are easily assigned to other POINTs to simplify POINT setup and maintenance.

Notes Tab

The **POINT Properties / Notes** tab allows you to attach a text note to the POINT along with a date / time stamp. This feature conveniently stores and records relevant POINT information such as maintenance history.

  - Coded notes uploaded from the DAD for the current Machine display in the **Notes** tab.

- Click the **Notes** tab's **Add** button to add a new note and date / time stamp.
- Click the **Save** button to save edits made to a note.
- Click the **Undo** button to cancel edits made to a note.
- Click the **Remove** button to remove the selected note from the display.

POINT Properties / Notes fields include:

Date – Select the current date from the drop down list.

Time – Select the current time.

The selected date and time appear in the dialog's left **Notes** field.

Text – Type in desired note text in the text field.

- Click the tab's **OK** button to save all entries.

Images Tab

Scanned photographs or digital images can be added to a particular POINT, stored in the database, and viewed from the **Images** tab. Images help identify SETs / machines, organize similar equipment, and document known defects.

POINT Properties / Images fields include:

Image – All attached images display in the drop down list.

Description – Enter text to identify the image. Click the **Save** button to save your description entry. If saved, the new description replaces the filename in the **Images** list.

To add a new image:

- Click the **Add** button to add a new image. The Windows' **Open** dialog displays. Select desired image and click **Open** to add or **Cancel** to undo.
    - Added images use the filename as the default description.

To replace the current image file with a newer image:

- Click the **Browse** button.
- Select a replacement image file. The new image displays on the tab.
    - The image name and description of the old image are retained for the replacement image.
- Click **Save** to confirm the image replacement.
- Click **Cancel** to undo the image replacement.

To export an image to a specific location:

- Select the image to export.
- Click the **Export** button.
- When prompted, enter the desired export location and filename and click **OK**.

The image is copied and saved to the specified location, but still remains attached to the assigned POINT.

Setup Log

The **POINT Properties' Setup Log** tab records changes made to the POINT's configuration.

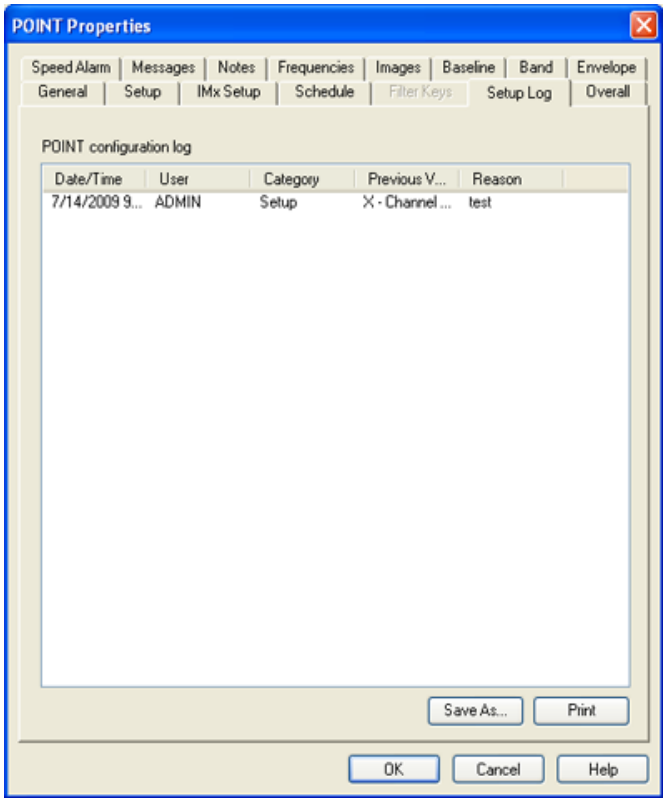


Figure 2 - 22.
The **POINT Properties** Dialog's **Setup Log** Tab.

POINT Properties / **Setup Log** fields include:

Date/Time – Displays the date/time stamp when the change occurred.

User – Displays the user's name that made the change.

Category – Displays the POINT properties tab to which changes were made.

Previous Value – Displays the previous value before the current change occurred.

Reason – Displays the user entered reason for making a change to the POINT's configuration. If no reason is required or entered, this column is empty.

- When you make a change to a POINT's properties, you are requested to enter a reason for the change. Reference **Chapter 2 - Setting Your @ptitude Analyst Preferences** in the *SKF @ptitude Analyst Introduction and Global Features* user manual for details..

Save As – Click to save a copy of the log file to your computer's hard drive.

Print – Click to print a copy of the log file.

POINT Setup Validation Dialog

The POINT Setup Validation Dialog launches when you enter incompatible or erroneous information on the **Setup** or **Expressions** tabs.

The **POINT Setup Validation** dialog displays both errors and recommendations. For recommendations, a message box displays prior to the **POINT Setup Validation** dialog, which allows you to ignore or view the **POINT Setup Validation** dialog.

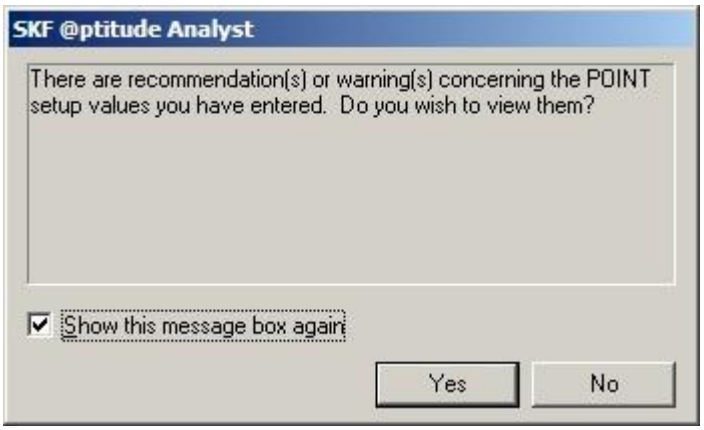


Figure 2 - 23
The POINT Setup Validation Recommendation Message Box.

- If you do not wish to see the POINT Setup Validation Message Box for recommendations or warnings, uncheck and disable the **Show this message box again** checkbox.
    - You may also modify this preference from the **Customize** menu's **Preferences** dialog.
- Press **Yes** to view the **POINT Setup Validation** dialog.
    - Press **No** if you wish to close the message box without viewing the recommendation details.

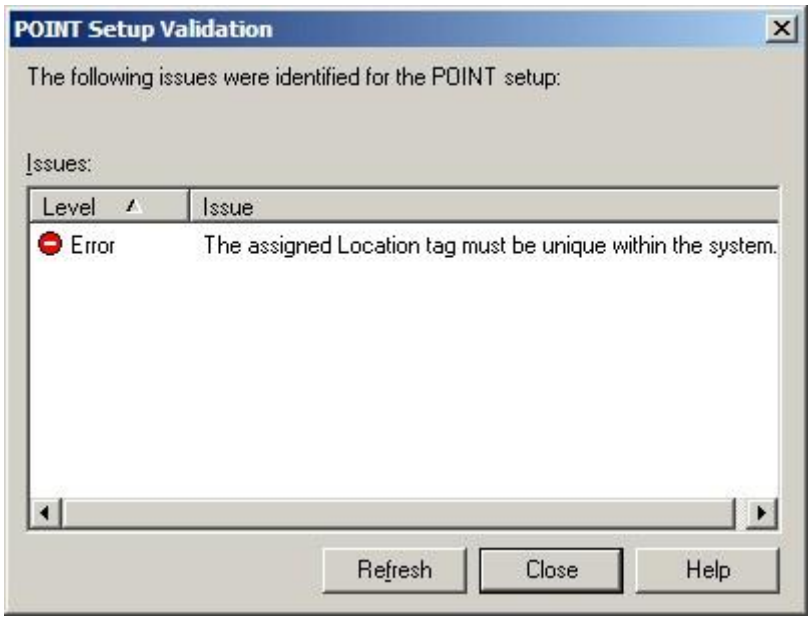


Figure 2 - 24.
The **POINT Setup Validation** Dialog for the **Setup** tab.

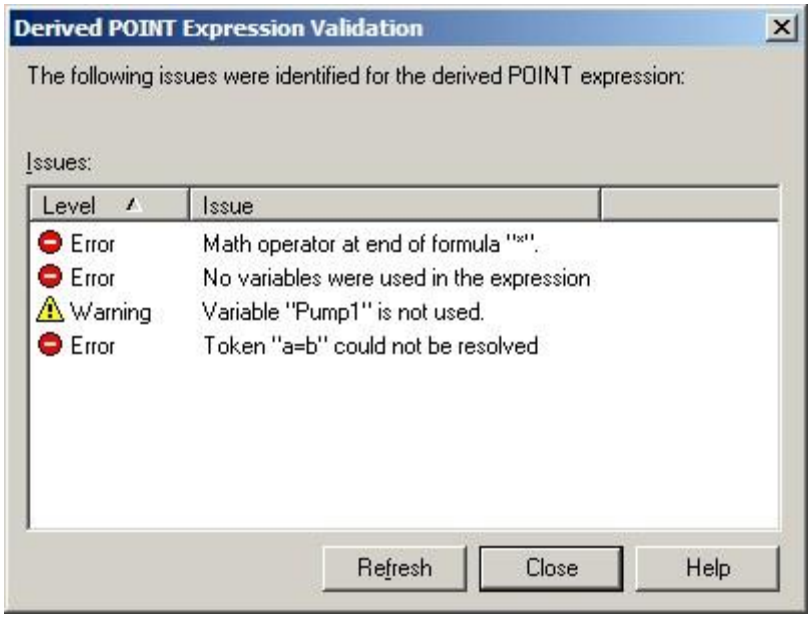


Figure 2 - 25.
The **POINT Setup Validation** Dialog for the **Expressions** tab.

- The **POINT Setup Validation** dialog displays automatically for settings in error, and after the message box for settings that are recommendations or warnings.

You may edit POINT setup information while the **POINT Setup Validation** dialog is displayed. Simply move the dialog out of the way, and make any changes to your **POINT Properties / Setup** or **Expressions** tab while referencing the errors or recommendations.

- Press the **Refresh** button if you have made corrective changes to your **POINT Properties / Setup** or **Expressions** tab in the background. If you have eliminated the error or recommendation, they will no longer display in the **POINT Setup Validation** dialog.
- Press the **Close** button to close the **POINT Setup Validation** dialog and return to the **POINT Properties Setup** or **Expressions** tab.

Multiple POINT Properties

The **Multiple POINT Properties** dialog is available when more than one POINT is selected. This dialog provides a set of tabs to view and modify set-up parameters common among the set of selected POINTs. The type of POINTs selected determine which tabs display in the **Multiple POINT Properties** dialog.

- Configured parameters overwrite each selected POINT's previous settings.

MCD Tab

The **MCD** tab allows you to re-apply MCD alarm settings, eliminating the need to define alarms individually, which saves time and database space.

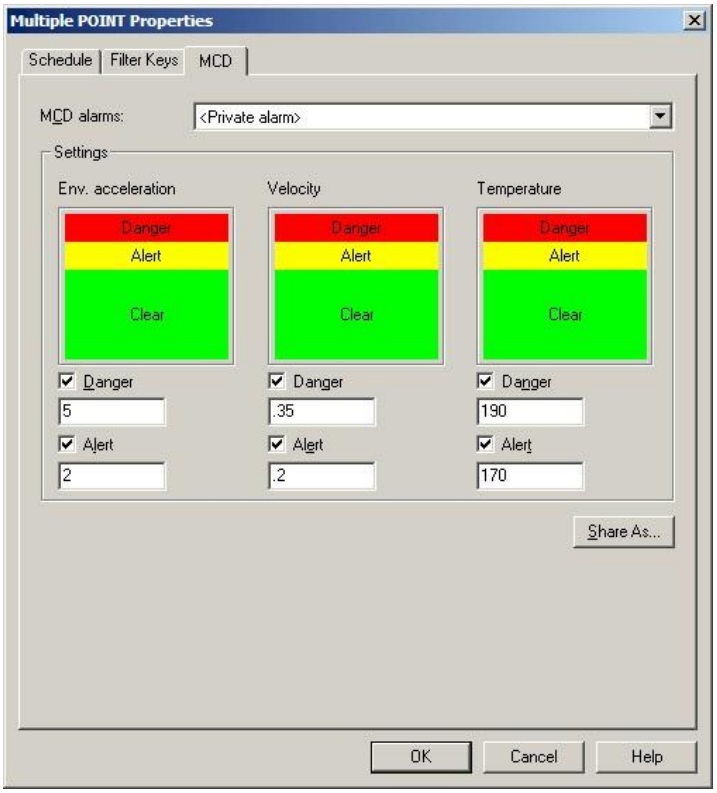


Figure 2 - 26.
The **Multiple POINT Properties** Dialog's **MCD** Tab.

Use the **MCD** tab to view and set POINTs' MCD alarms. The alarm can be configured in a varied of ways using the **MCD** tab's fields and graphic displays.

The current alarm appears in the **MCD Alarms** field. The current alarm's values display graphically and numerically below in the dialog's **Settings** areas, divided into each MCD measurement type: **Env. Acceleration**, **Velocity**, and **Temperature**.

> ➢ The **MCD Alarms** drop-down list displays all previously created overall alarms and a **<Private Alarm>** option. Use the **<Private Alarm>** selection to create a private (unique) MCD alarm for use with the current POINTs *only*.

The **Settings** area allows you to enable and configure **Danger** and **Alert** alarms for each MCD measurement type.

To assign a shared alarm to the current POINTs:

- Select the shared alarm from the drop-down list and click the **OK** button. Shared alarms may be applied to an unlimited number of POINTs.

Sharing MCD Alarms

Alarms initially created as private alarms may be converted into shared alarms. To share a newly created Private alarm, select the new Private alarm and click the tab's **Share As** button.

When the **Share As** dialog displays, you will be prompted to give the shared alarm a unique name for easy identification.

- Enter a name for the shared alarm and click the **OK** button.

The new shared alarm now appears as an available selection in the drop-down list.

Inspection Tab

The **Inspection** tab allows you to re-apply Inspection alarm condition settings, eliminating the need to define alarms individually, which saves time and database space.

> ➢ Inspection results and conditions cannot be modified if data has been collected for the POINTs.

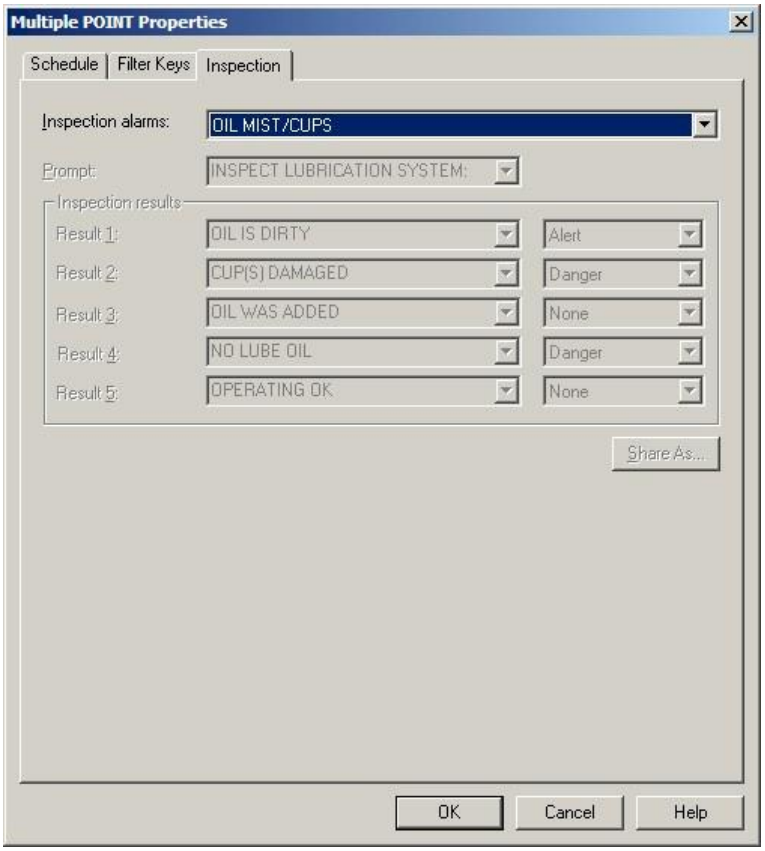


Figure 2 - 27.
The **Multiple POINT Properties** Dialog's **Inspection** Tab.

Use the **Inspection** tab to view and set POINTs' Inspection settings and alarm conditions for POINTs without data.

- Fields are unavailable if POINTs already have collected data.

The current alarm appears in the **Inspection alarms** field. The current inspection results and alarm conditions display below in the **Result** and **Conditions** areas.

- The **Inspection alarms** drop-down list displays all previously created inspection alarms and a **<Private Alarm>** option. Use the **<Private Alarm>** selection to create a private (unique) Inspection alarm for use the current POINTs *only*.

The **Results** and **Conditions** areas allow you to enable and configure a set of result options and their corresponding alarms from the drop-down lists.

To assign a shared alarm to the current POINTs:

- Select the shared alarm from the drop-down list and click the **OK** button. Shared alarms may be applied to an unlimited number of POINTs.

Sharing Inspection Alarms

Alarms initially created as private alarms may be converted into shared alarms. To share a newly created Private alarm, select the new Private alarm and click the tab's **Share As** button.

When the **Share As** dialog displays, you will be prompted to give the shared alarm a unique name for easy identification.

- Enter a name for the shared alarm and click the **OK** button.

The new shared alarm now appears as an available selection in the drop-down list.

Schedule Tab

The **Schedule** tab allows you to set a common schedule for all the currently selected POINTs.

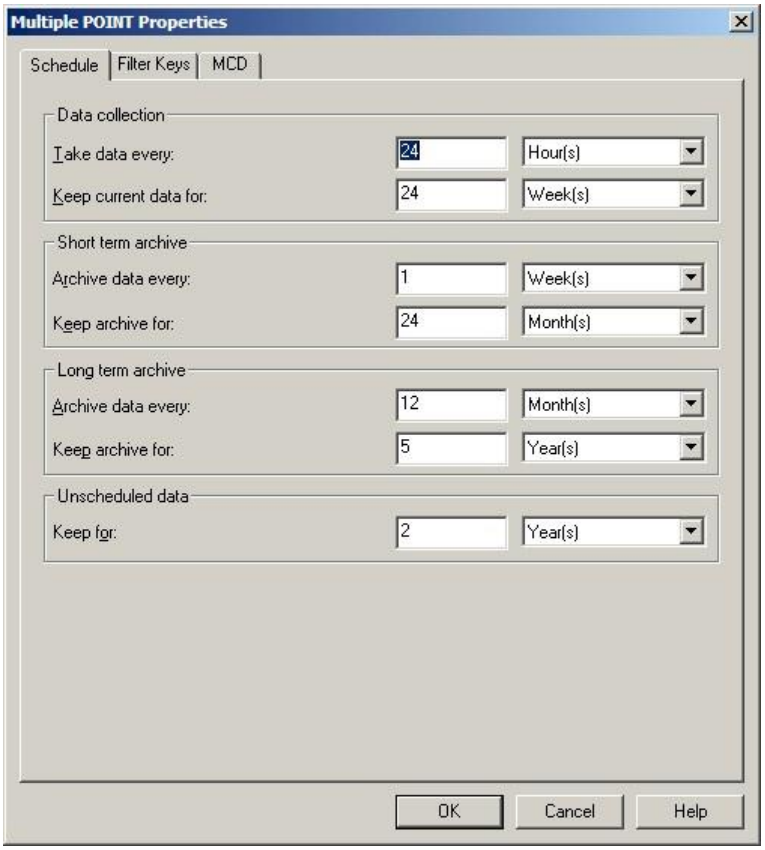


Figure 2 - 28.
The **Multiple POINT Properties** Dialog's **Schedule** Tab.

Fields in the **data collection** portion of the **Schedule** tab include:

Take data every – Enter a numerical value to indicate how often data should be collected and select the appropriate units from list box options (**Second(s), Minute(s), Hour(s), Day(s)**). The POINT is tagged as overdue for data collection if the time range between the current date (today) and the last data collection date is longer than the specified **Take data every** setting.

- The **Take data every** field is used to determine if a POINT is overdue for data collection.

Keep current data for – Enter a value to indicate how long to keep (store) the measurement record in the database's "current data" bin and select the appropriate units (**Wk(s), Mo(s), Yr(s)**). When the specified time from data

collection elapses, and a Scheduled or Monitor archive process is performed, the measurement is typically moved from the "current data" bin into the "short term archive" bin (or discarded) as specified in the **Short term archive / Archive data every** field.

- The **Keep current data for** field determines the length of time a measurement is kept before it is archived.

Short term archive (optional, but typically enabled)

Fields in the **short term archive** section include:

Archive data every – Determines whether data leaving the "current data" bin is archived in the "short term archive" bin. Enter numerical value to indicate how often data leaving the "current data" bin is stored in the "short term archive" bin and select appropriate units (**Wk(s), Mo(s), Yr(s)**). As scheduled archives occur, measurements leaving the "current data" bin are accepted into the "short term archive" bin only if this **Archive data every** setting has expired since the last measurement was stored in the "short term archive" bin. Otherwise, they are discarded.

Keep archive for – Enter a value to indicate how long to keep (store) the measurement record in the "short term archive" bin and select appropriate units (**Wk(s), Mo(s), Yr(s)**). When the specified time of storage elapses, and a scheduled archive process performed, the measurement is typically moved from the "short term archive" bin into the "long term archive" bin (or discarded) as specified in the **Long term archive** fields.

Fields in the **long term archive** section include:

Archive data every – Determines whether data leaving the "short term archive" bin is archived in the "long term archive" bin. Enter numerical value to indicate how often data leaving the "short term archive" bin is stored in the "long term archive" bin and select appropriate units (**Wk(s), Mo(s), Yr(s)**). As scheduled archives occur, measurements leaving the "short term archive" bin are accepted into the "long term archive" bin if this **Archive data every** setting has expired since the last measurement was stored in the "long term archive" bin.

Keep archive for – Enter value to indicate how long to keep (store) the measurement record in the "long term archive" bin and select appropriate units (**Wk(s), Mo(s), Yr(s)**). When the specified time of storage elapses, and a scheduled archive process is performed, the measurement is discarded.

Unscheduled data

The last section of the tab schedules alarm data. In on-line DAD systems, alarm data is automatically placed in the "Unscheduled data" bin. This setting determines how long alarm data is stored in the alarm data bin before it is discarded. Fields include:

Keep for – Specify value to indicate the desired length of time to store alarm data and select appropriate units (**Wk(s), Mo(s), Yr(s)**). After the specified storage time elapses, the alarm data is discarded.

Filter Keys Tab

@ptitude Inspector allows you to create **Filter Keys** which can be associated with POINTs and Machines for automated filtering purposes. For example, if you activated a "Pump" filter key for a Group and later filtered by **Filter Key / Pump**, the group would display.

> ➢ Filter key creation is discussed later in this chapter.

Filter key searches list all POINTs or Machines sharing a specified filter key (or multiple filter keys). The **Filter Key** tab displays all created filter keys and indicates whether or not they are currently assigned.

- Click a specific Filter Key's checkbox to associate it with the current Group.
- Click the **Filter Key** dialog's **OK** button to save your filter key assignments.

> ➢ The checkbox appears gray if the filter key is assigned to the current group only because it was assigned to the group's parent.
>
> ➢ Click the **Filter Key** dialog's **OK** button to save your filter key assignments.

Overall Tab

The **Overall** tab allows you to re-apply previously defined "shared" overall alarms, eliminating the need to define alarms individually, saving time and database space.

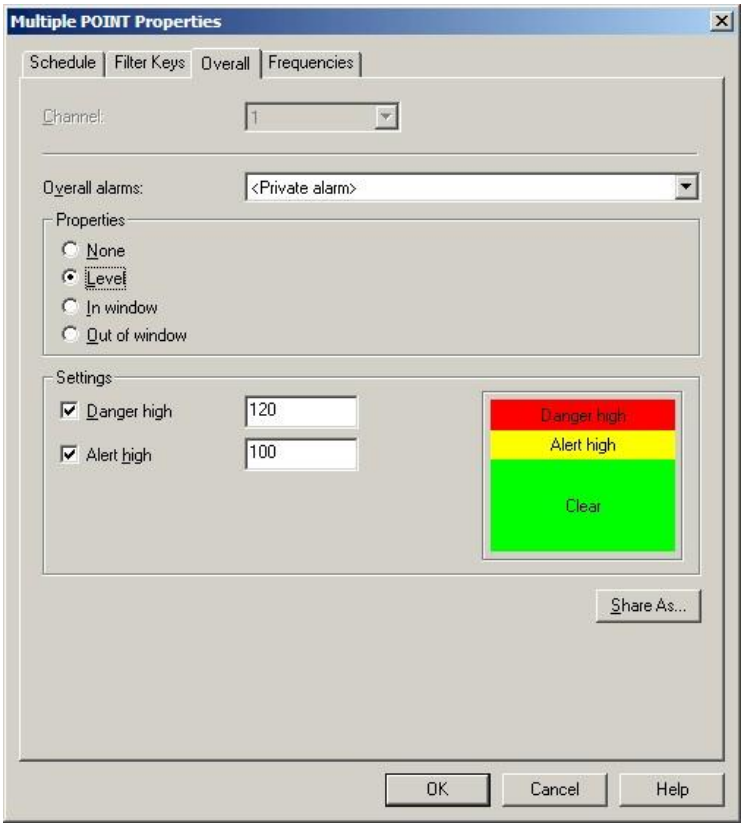


Figure 2 - 29.
The **Multiple POINT Properties** Dialog's **Overall** Tab.

Use the **Overall** tab to set Process POINTs' overall alarms. The alarm can be configured in a variety of ways using the **Overall** tab's fields.

The current alarm appears in the **Overall alarm** field. The current alarm's values display below in the dialog's **Properties** and **Settings** areas.

The **Overall alarms** drop down list displays all previously created overall alarms and a <**Private Alarm**> option. Use this drop down list to specify whether you wish to set up a unique **<Private Alarm>** for the current POINTs only, or specify a previously defined "shared" alarm (selected by name). If you specify a shared alarm, it's alarm settings automatically display in subsequent fields. If you specify a **<Private Alarm>**, proceed to configure the tab's alarm settings as described below.

The **Properties** area displays alarm detection options. Select from:

None – No overall alarm is set for the POINTs.

Level – Measurements *exceeding* the set levels will result in an alarm condition.

In Window – Measurements *falling within* the set levels will result in an alarm condition.

Out of Window – Measurements *falling outside* the set levels will result in an alarm condition.

To assign a shared alarm to the current POINTs:

- Select the shared alarm from the drop down list and click the **OK** button. Shared alarms may be applied to an unlimited number of POINTs.

Shared Alarm

Alarms initially created as private alarms may be converted into shared alarms. To share a newly created Private alarm, select the new Private alarm and click the tab's **Share As** button.

The **Share As** dialog specifies the alarm as a shared alarm. When the **Share As** dialog displays, you will be prompted to give the shared alarm a unique name for easy identification.

- Enter a name for the shared alarm and click the **OK** button.

The new shared alarm now appears as an available selection in the drop down list. Shared alarms are easily assigned to other POINTs to simplify POINT setup and maintenance.

Modify by Attribute

@ptitude Inspector's **Modify by Attribute** feature allows you to make similar changes for one or more machines or POINTs by allowing you to change specific attributes (for example, alarm values, collection schedules, etc.) all at once.

> ➢ POINT setup changes made in Modify by Attribute are not incorporated into POINT Properties.

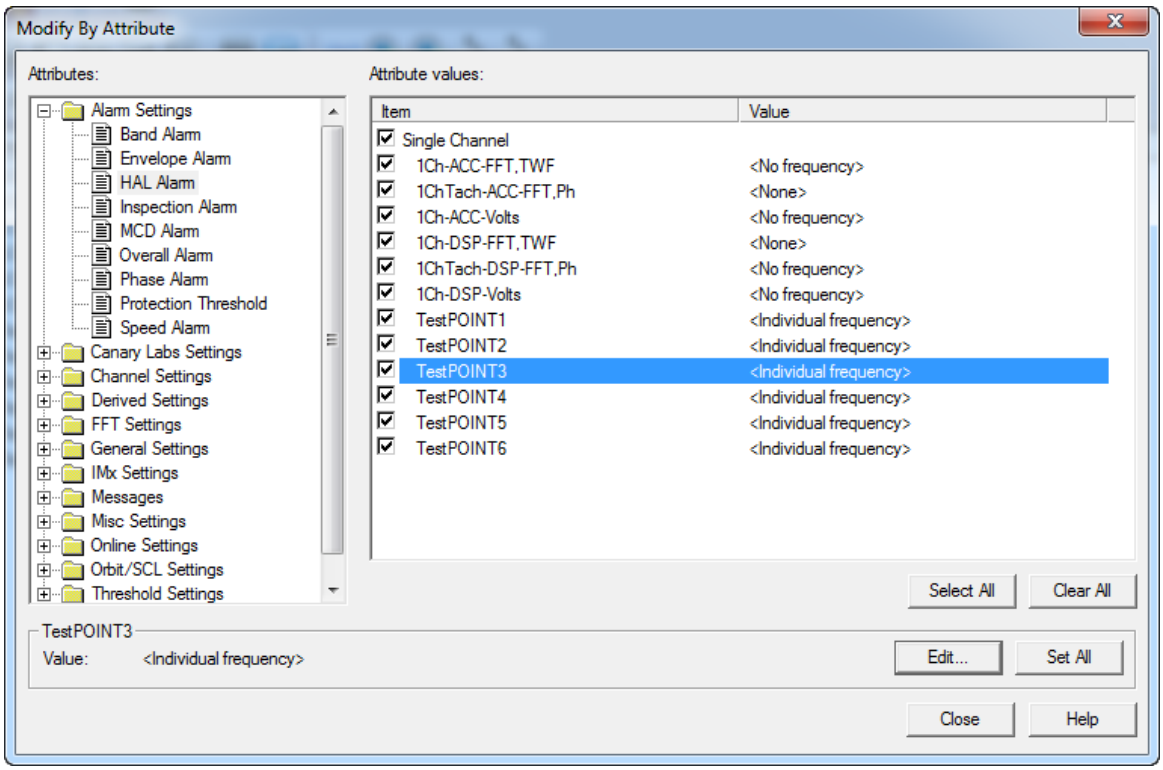


Figure 2 - 30.
The **Modify by Attribute** dialog.

To Modify Settings:

- Select the hierarchy group (SET / Machine) that contains POINTs whose attributes you wish to modify.

  > ➢ All Groups and POINTs branching from the specified Group display in the **Modify by Attribute** dialog.

- Select the **Edit** menu's **Attributes** option. The **Modify by Attribute** dialog displays.

The **Modify by Attribute** dialog is split into two panels:

Right panel - displays the selected hierarchy items and their value for the currently selected attribute in the left panel.

- Click to highlight the POINT for which you wish to modify the selected attribute. Its current setting / value displays in an area beneath the panels.

Left panel - displays the attributes available for modification organized into six categories: **Alarm Settings, Derived Settings, FFT Settings, General Settings**, **Messages**, and **Misc. Settings.**

- If you have in the full version of @ptitude Analyst (CMSW7400), you will also have **Multi-Channel Settings**, **On-line Settings,** and **Orbit/SCL Settings** options. Open the appropriate category's folder to view its attributes, then click to specify the attribute you wish to modify. The right panel updates to show the selected attribute's current setting for each item.

- Edit the setting.
- Click the **Set** button to update the attribute setting for the selected POINT only, or click the **Set All** button to update the attribute setting for all POINTs in the right panel.

  ➢ Use the **Set All** feature to quickly modify an attribute value for multiple items simultaneously. For example, if you want to set all **Averages** to an identical value, select **Averages** from the **Attributes** list. Attribute values display for all items in the tab's **Attribute values** area. Select an individual item, enter the desired value, and click the **Set All** button. All items will now have the specified number of averages.

- After completing attribute modifications for all POINTs, click the **OK** button to save the settings in the database.

Measurement Properties

General Tab

The **Measurement Properties** dialog displays properties for individual measurement data records.

To view / edit a measurement's properties:

- Select the measurement record.
- Select the **Edit** menu's **Properties** option, or use the Properties toolbar button. The **Measurement Properties** dialog displays.

The current measurement's time and date appears in the **Date** and **Time** fields of the **Measurement Properties / General** tab.

Measurement Properties fields include:

Date - View or edit the measurement record's data collection date. Select a new date from the drop down list.

Time - View or edit the measurement record's data collection time. Use the arrows to adjust the time.

➢ This feature should only be used to edit an incorrect date or time.

Overall / Channel # - View or edit the measurement record's overall value. Values are displayed for **Channel 1** and/or **Channel 2** as applicable.

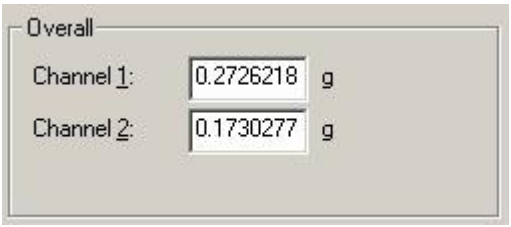


Figure 2 - 31.
The **Measurement Properties** Dialog's **General** Tab's **Overall** Area.

- The **Overall** area is only available for Process POINTs.
- This feature should only be used to edit an incorrect overall value.
- If necessary, the measurement's alarm status will automatically update for the new measurement value.

Exclude measurement - Enables / disables the measurement record for inclusion in statistical calculations.

Readings - Displays which readings correspond to the current measurement on the indicated date / time.

Alarm status will be automatically updated for the new current measurement, if necessary.

The overall value for the current Process measurement's indicated date / time appears in the tab's **Overall** area. Values are displayed for **Channel 1** and/or **Channel 2** as applicable. These values may be edited in the **General** tab. Enter a new value in the appropriate channel's text box.

- This feature should only be used to edit an incorrect overall value.

The tab's **Readings** area displays which readings correspond to the current measurement on the indicated date / time.

- Click the **Exclude measurement** checkbox to exclude the current measurement from being included in statistical calculations.
- After editing all necessary properties, click the **OK** button to save changes.
- Click **Cancel** to close the dialog without saving changes.

MCD Tab

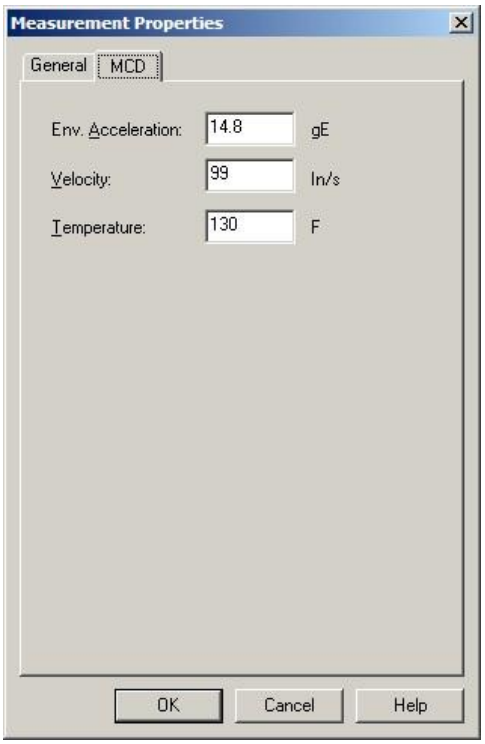


Figure 2 - 32.
The **Measurement Properties** Dialog's **MCD** Tab.

The **Measurement Properties**' **MCD** tab displays the current measurement's **Env. Acceleration**, **Velocity**, and **Temperature** values. Edit current values in the appropriate text box.

> ➢ This feature should only be used to edit an incorrect reading.

Alarms will be automatically updated for the new current measurement, if necessary.

- Click the **OK** button to save changes.
- Click **Cancel** to close the dialog without saving changes.

Inspection Tab

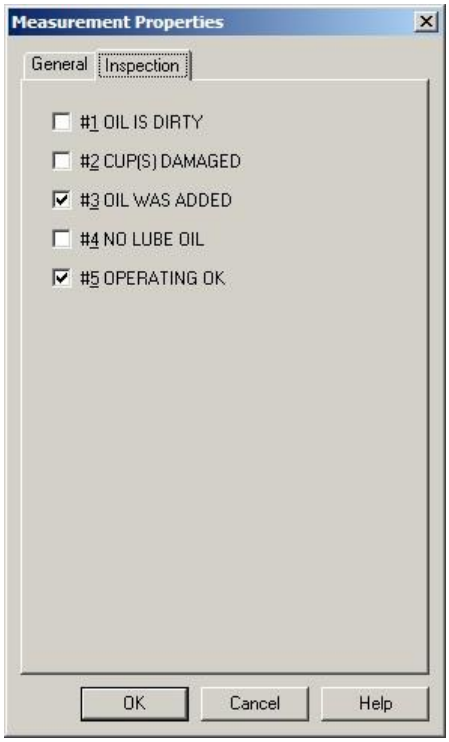


Figure 2 - 33.
The **Measurement Properties** Dialog's **Inspection** Tab.

The **Measurement Properties**' **Inspection** tab displays the current measurement's Inspection reading. Edit current values using either the option buttons (*Single-Select Inspection POINTs*) or the checkboxes (*Multi-Select Inspection POINTs*).

- This feature should only be used to edit an incorrect reading.

Alarms will be automatically updated for the new current measurement, if necessary.

- Click the **OK** button to save changes.
- Click **Cancel** to close the dialog without saving changes.

Set Speed (Multiple)

Use the Set Speed (Multiple) feature to set the same measurement speed for multiple FFT measurements:

- Starting from a hierarchy, ROUTE, or workspace, expand the appropriate machine. Beneath the machine in the hierarchy, right-click on the measurement POINT you wish to use as a reference and select **Set Speed (Multiple)** from the resulting context menu.

OR

- Starting from a hierarchy, ROUTE, or workspace, expand the appropriate machine. Beneath the machine in the hierarchy, click on the appropriate measurement POINT to display its measurements in the right panel. Then, right-click on the single measurement you wish to use as a reference and select **Set Speed (Multiple)** from the resulting context menu.

OR

- Starting from an FFT measurement plot, right-click on the single cursor and select **Set Speed (Multiple)** from the resulting context menu.

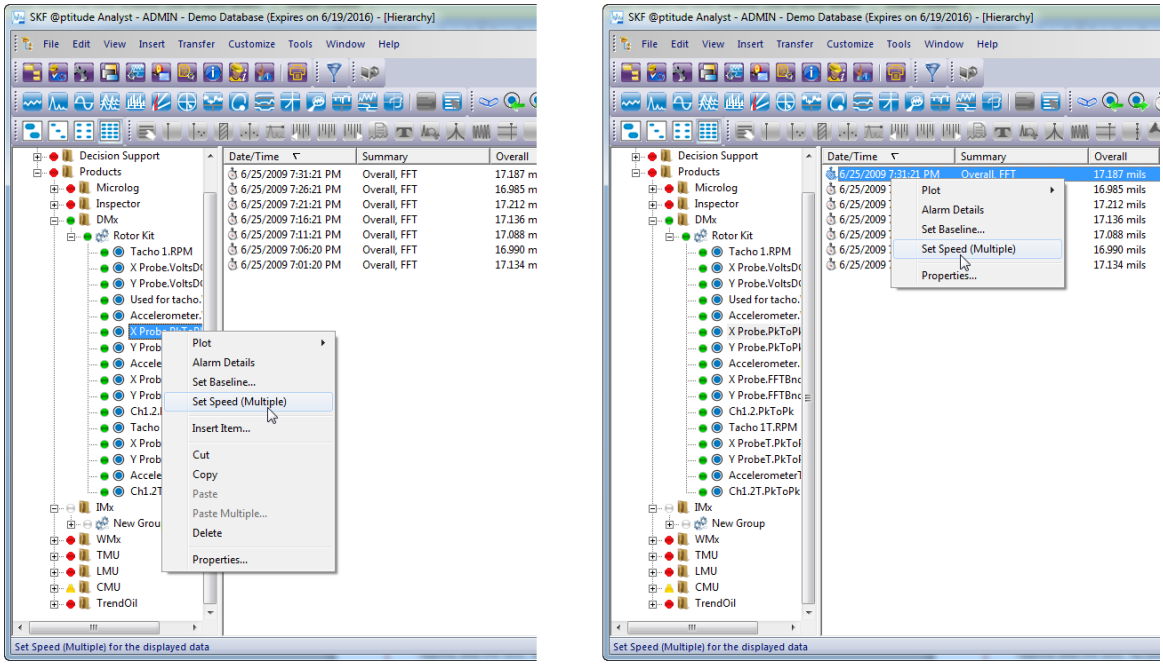


Figure 2 - 34.
Selecting **Set Speed (Multiple)** from a POINT Versus from a Measurement within a Hierarchy.

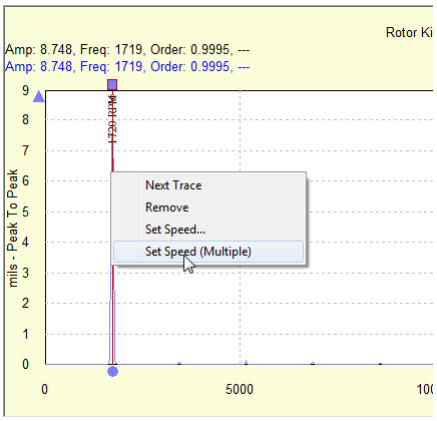


Figure 2 - 35.
Selecting **Set Speed (Multiple)** from an FFT Measurement Plot.

The **Set Speed (Multiple)** window appears.

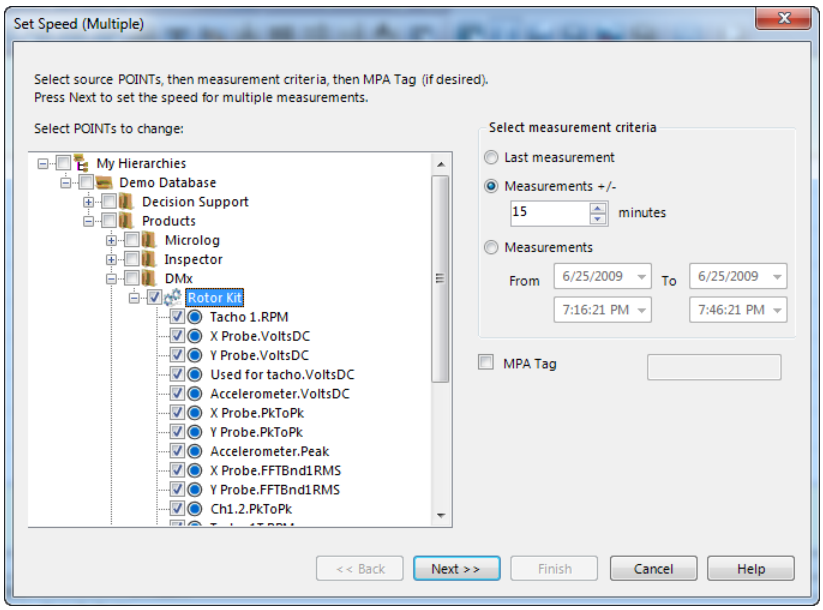


Figure 2 - 36.
Set Speed (Multiple) Window.

- Expand the machine in the **Set Speed (Multiple)** window's hierarchy view and deselect (remove checks from) any POINTs for which you do *NOT* intend to set a measurement speed value. By default, all POINTs are selected (checked) for adjustment.
- Specify the range of measurements for which you intend to set a measurement speed value:

  Last measurement – Select to work only with the last measurement collected for each selected POINT.

Measurements + / - ... minutes – Select, then specify *x* number of minutes to work only with measurements collected within the range starting *x* minutes prior to and ending *x* minutes following the basis date and time.

- If you selected a POINT as the reference (launched this window from a POINT), the basis date and time are equal to the date/time stamp of the POINT's last measurement. If you selected a single measurement as the reference (launched this window from a single measurement or from an FFT plot), the basis date and time are equal to the date/time stamp of that measurement.
- The system will remember the specified number of minutes when you launch this dialog again.

Measurements... From... To... - Select, then specify starting and ending dates and times to work only with measurements collected within that range.

- By default, this range starts *x* minutes prior to and ends *x* minutes following the basis date and time, based on the current **Measurements + / - ... minutes** setting.

- Select, then enter an **MPA Tag** value to work only with measurements that contain that value in their Description (Point Properties > General tab).
- Click **Next>>**. The **Set Speed (Multiple) Measurement List** window appears, displaying a list of all measurements for the applicable POINTs that meet the criteria established.

The **Set Speed (Multiple) Measurement List** window displays a list of all measurements for the applicable POINTs that meet the criteria established in the **Set Speed (Multiple)** window.

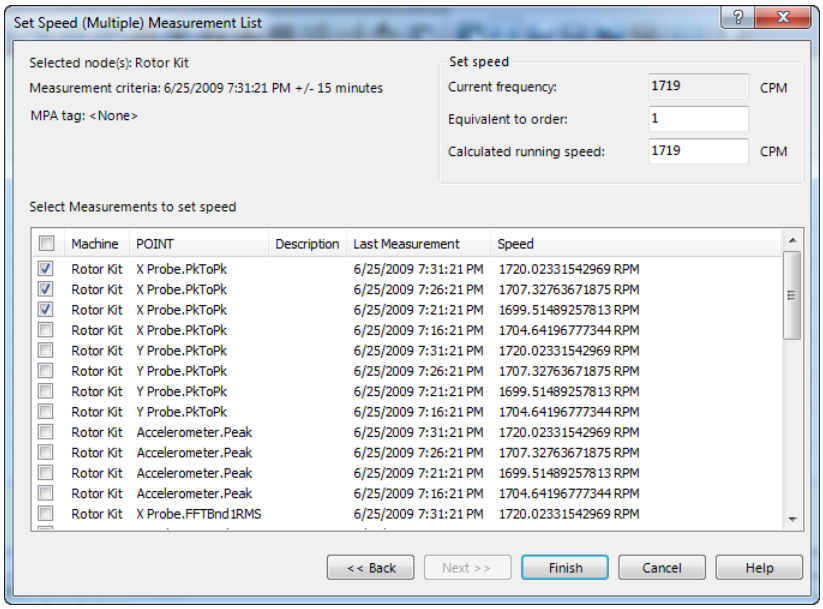


Figure 2 - 37.
Set Speed (Multiple) Measurement List Window.

- From the measurement list, select (check) each measurement to which you intend to apply the reference POINT's measurement speed.
    - Select (check) the checkbox in the list header to select all measurements.
    - To change the criteria established in the previous window that determine the measurements in this list, click **<<Back**.
    - Click on any column header to sort the list according to that column.
- Verify and/or enter **Set Speed** values.

  Current Frequency – The speed value from the reference POINT measurement.
    - If you initially selected a POINT as the reference, this speed value comes from the POINT's last measurement. If you initially selected a single measurement as the reference, this speed value comes from that measurement. If you launched this function from an FFT plot, this speed value is the frequency value of the single cursor on that FFT plot.

  Equivalent to order – If the speed value entered is at a known harmonic, then you can use this value to factor the **Calculated running speed** to its 1x component.

  Calculated running speed – Enter the speed value you wish to apply to all selected (checked) measurements.
- Click **Finish**. The system applies the **Calculated running speed** and **Equivalent to order** values to all measurements selected (checked) in this list.

Calculate Derived POINTs

You must manually calculate derived POINTs upon the initial creation of a derived POINT, or after editing a derived POINT's expression settings. Once the initial calculation has been performed manually, **MARLIN / Microlog Inspector** automatically calculates the derived POINT during data collection.

- Upon the initial creation of a derived POINT, if the assigned variables do not have existing measurement data, it is not necessary to manually calculate the derived POINT. It is necessary to manually calculate a derived POINT only when the assigned variables already have measurement data.

To manually calculate a derived POINT:

- Select the newly created or recently edited derived POINT from the Hierarchy.
- Select the **Edit** menu's **Calculate Derived POINTs** option to quickly calculate measurement values for the derived POINT.
- The **Calculate Derived POINTs** message dialog displays. Select **Yes** to calculate the selected derived POINT.

- If calculating a newly created derived POINT, new measurement data displays in the Hierarchy's right panel. Existing measurement data for the assigned variables is used in the calculation to create measurement data records for the derived POINT.
- If calculating a recently edited derived POINT, all existing derived POINT measurement values previously calculated for the selected derived POINT(s) are deleted and replaced with new derived POINT measurements.

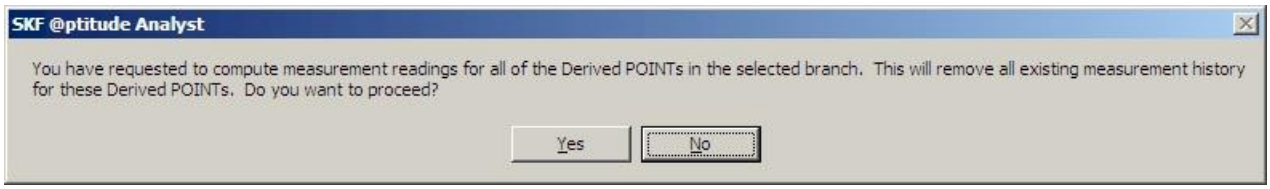


Figure 2 - 38.
The **Edit** menu's **Calculate Derived POINTs** Message Dialog.

IMPORTANT – The measurement data for a derived POINT's variables must be collected before the derived POINT can be calculated. For example, if two variables are assigned to a derived POINT, POINTs A and B in the ROUTE should be the variables, and POINT C should be the derived POINT. This allows the derived POINT to be calculated using the variables' new measurement data.

When downloading a ROUTE with derived POINTs to the **MARLIN / Microlog Inspector**, the derived POINT settings also download to the **MARLIN / Microlog Inspector**. Derived POINTs are then calculated during ROUTE data collection. The operator must perform normal data collection on the derived POINT (highlight the derived POINT and press the **Collect** button).

When @ptitude Inspector uploads **MARLIN / Microlog Inspector** derived POINTs, the measurement data area automatically updates with the new derived POINT measurements.

Manual Archive

@ptitude Inspector's **Manual Archive** feature adds flexibility as it allows you to specify POINTs to archive, and allows you to archive the newest data in addition to the oldest data.

The **Manual Archive** process differs from a Scheduled or Monitor archive process in several ways.

Manual Archive:

- Takes place immediately.
- Archives only POINTs branching from the selected hierarchy item (or specified measurement records).
- Only archives measurements from the "current data" bin (unless a specific measurement record from another bin is specified).

- Allows you to specify whether to archive each selected POINT's **Oldest** or **Newest** measurement record from the current data bin.
- Allows you to specify the archive bin in which to place the archived measurements.

Use **Manual Archive** to change the archive status for any or all hierarchy items. **Manual Archive** is useful to manually set a measurement's archive status, bypassing automatic archive schedule (if applicable).

To use manual archive:

- In the hierarchy list, select a hierarchy item(s) whose measurements you wish to manually archive. All POINTs branching from the selected item are archived.
- Select the **File** menu's **Manual Archive** option. The **Manual Archive** dialog displays.

The dialog's top area displays a warning if the selected data is tagged as **baseline**. Baseline data cannot be modified.

Change archive status in the dialog's **Store measurements as** area. Select from:

Current data bin (available only when archiving a measurement record from other bins)

Unscheduled data bin

Short term archive data bin

Long term archive data bin

The dialog's bottom area displays **Archive measurements**. If working from a POINT or above on the hierarchy branch, select from:

Oldest Measurement – Each selected POINT's oldest measurement in the current data bin.

Newest Measurement – Each selected POINT's newest measurement in the current data bin.

- Manual Archive does **not** utilize "scheduled" archive settings

@ptitude Inspector Scheduler

Current Scheduled Events

The **Scheduler** feature allows you to configure the software to perform scheduled functions based on specific conditions. A scheduled event consists of a system event and an action to be executed whenever that event occurs. For example, you can use **Scheduler** to configure the software to display a message when a specific operation completes (action) when a DAD has completed processing (system event).

- Select the **Customize** menu's **Scheduler** option. The **Scheduler** dialog displays.

The **Scheduler** dialog displays all current scheduled events and the action assigned to each event. Use the **Scheduler** dialog to add new events and maintain existing events.

To add an event:

- Click the **Add** button to define an event. The **Event Scheduler Wizard** launches automatically.

You can also add an event by copying an existing event, then modifying the copy as necessary.

To copy an event:

- Highlight the event you would like to copy and click **Copy**. The **Event Scheduler Wizard** launches. As you navigate the wizard, options default to the settings from the copied event. You may modify the settings as necessary.

To edit an event:

- Highlight the event you would like to modify and click **Edit**. The **Event Scheduler Wizard** launches with the settings from the event you are editing.
- Navigate the wizard to the settings you wish to modify and edit the event as necessary.

To remove an event:

- Click the **Remove** button to delete a scheduler entry.
    - ➢ Scheduled entries remain in effect until they are removed.

Event Scheduler Wizard

A scheduled event consists of a system event and an action to be executed whenever that event occurs.

- ➢ Scheduled events can only execute if the application is running. For example, if your event is a specific time, such as three a.m., your specified action will not be performed if the program is shut down at three a.m., and it will not be automatically performed when the program is restarted.

The **Event Scheduler Wizard** guides you through the process of scheduling events.

- Click the **Next** button to continue.
- Select the event you want the system to monitor and that will cause the scheduled action to be performed. All available events appear in the **Select an event** window.

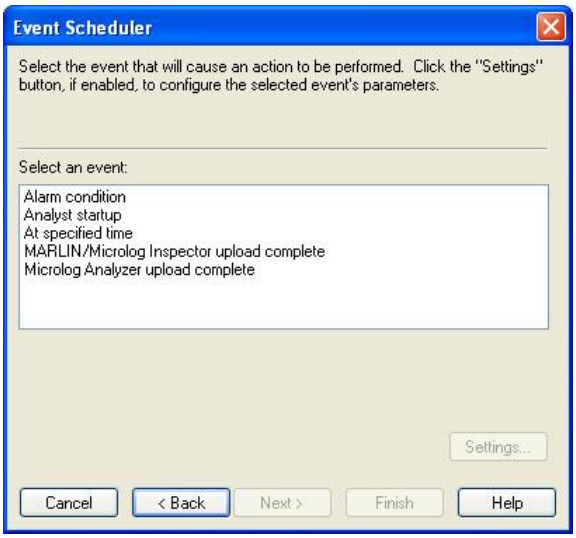


Figure 2 - 39.
The **Event Scheduler Wizard.**

Some events require specific settings that further define the event. When settings are required, the **Settings** button is enabled. You must specify the required **Settings** before the **Next** button is enabled.

- Complete all **Settings** entries, if required.
- Click the **Next** button.
    - ➢ Individual events are detailed later in this section.

All available actions display in the **Select an action** area.

- Select the action you wish the system to perform when the indicated event occurs.

Some actions require specific settings that further define the action. When settings are required, the **Settings** button is enabled. You must specify the required **Settings** before the **Next** button is enabled.

- Complete all **Settings** entries, if required.
- Click the **Next** button.
    - ➢ Individual actions are detailed later in this section.

By default, scheduled events only execute if the user who created the event performs the triggering action. (For example, a report set to run on @ptitude Analyst startup only runs when the user who created the event logs in.)

If the user creating the scheduled event is an administrator, an additional dialog displays providing the option of assigning the event to another user, or delegating it to the Transaction Server.

The **Select Users** list shows all @ptitude Analyst users.

- Select the user who should trigger this event.
    - ➢ Events scheduled to trigger at a specified time only occur if the user with whom the event is associated is logged into @ptitude Analyst. This applies to both users who are assigned an event by

an administrator and non-administrator users who create an event for themselves. For example, if the event is scheduled for three a.m., the specified action will not be performed if the designated user is shut down at three a.m., and it will not be automatically performed when the program is restarted.

Alternatively, if you have selected to generate a report with this scheduled event, **Delegate to Transaction Server** enables. The transaction server is a process that stays running in the background at all times. If your triggering event is on **MARLIN / Microlog Inspector** upload, this option allows you to have the transaction server generate the report whenever any user uploads **MARLIN / Microlog Inspector** data. If your triggering event is a specified time, the report runs at that time, regardless of whether the associated user is logged in.

- The report is generated to a file in the path specified in the **Report Location** field on the **Report Generator**'s **Assign** tab. If the **Delegate to Transaction Server** option is selected and the report location path references a local hard drive, the report is written to the Transaction Server host computer. It is recommended that you set the report location to a network drive and make sure the Transaction Server has read / write access to that location.

- Enable **Delegate to Transaction Server** to have the transaction server generate the report, rather than a specified user.
- Click the **Next** button.

The **Event Scheduler Wizard** displays a summary of the new scheduled event settings.

- Click the **Finish** button to save the scheduled event.
- Click the **Back** button to modify the scheduled event.
- Click the **Cancel** button to cancel the wizard dialog.

Scheduler Events

Alarm condition

This event is used to schedule an action to be performed when specific alarms occur.

- Click the **Settings** button to specify the data source, alarm condition, and alarm type for which this event should occur. The **Alarm Condition Settings** dialog displays.

Data source –Select the Hierarchies, SETs, Machines, POINTs, ROUTEs, and / or Workspaces to monitor for alarm conditions.

Alarm Conditions –Select the alarm condition (**In alert**, **In danger**, or **Both)** to monitor.

Alarm Type – Select one or more alarm types to monitor.

- Click **OK** to save settings.
- Click **Cancel** to discard settings.

Analyst startup

This event is the application's start up. Performs an action as soon as the application completes its startup process.

At specified time

Schedules a task to be performed at a specific time.

- Click the **Settings** button to specify the time that this event should occur. The **Time Event Settings** dialog appears.

Start Date - Select the date on which the scheduled event should run for the first time.

Start Time – Select the time at which the scheduled event should run for the first time.

Specify the interval for the event. Options are:

Hourly – Select to run the event **Every** *X* **hour(s)**. Enter the hourly time increment in the field (e.g., every 8 hours).

Daily - Select to run the event **Every** *X* **day(s)**. Enter the number of days in the field (e.g., every 3 days).

Weekly – Select to run the event **Every** *X* **week(s)**. Enter the number of weeks in the field, and enable the check box(es) for the day(s) of the week on which the event should run. (e.g., Every 2 weeks on Monday and Wednesday)

Monthly – Select to run the event on a monthly basis. Select the day of the month (1-31) and the frequency of the event in month(s) (e.g., Day 15 of every 2 month(s)); or select a day of the week and the **1st**, **2nd**, **3rd**, **4th**, or **last** week of the month, and the frequency of the event in month(s). (e.g., The 2nd Friday of every 1 month(s))

Yearly – Select to run the event on a yearly basis. Select the month / day and the frequency of the event in year(s). (e.g., January 1st of every 1 year(s)); or select a day of the week, the **1st**, **2nd**, **3rd**, **4th**, or **last** week of the month, the month, and the frequency of the event in year(s). (e.g., The 2nd Friday of January every 2 year(s))

- Click **OK** to save settings.
- Click **Cancel** to discard settings.

Upload Complete

Performs an action when an upload completes (as soon as the data has been processed into the database).

> ➢ The **Scheduler** feature is user specific and may only be applied to data uploaded by the current user.

- Click the **Settings** button to filter the event based on the ROUTE being uploaded. The **Upload Schedule Settings** dialog appears.

This dialog allows you to specify that the action should only occur if the data being uploaded from the Microlog Inspector / MARLIN belongs to a specific ROUTE.

All Uploads – Leave this option enabled if you do not wish to filter on data source.

ROUTE – Select this option if you only want the action to run when incoming data is from specified ROUTEs. Enable the check boxes next to the ROUTEs that should trigger the action. If data is uploaded from a ROUTE that is not selected, the event will not run.

Scheduler Actions

Display a message

Select the "display message" action to display your specified message text when the associated event occurs.

- Click the **Settings** button to enter your message text.

The **Display Message Action Settings** dialog appears.

- Type in the desired text.
- Click the **OK** button to save.
- Click the **Cancel** button to discard changes.

Generate Report

Select the **Generate Report** action to generate a specified report type when the associated event occurs.

To select report type:

- Select **Generate Report** from the dialog's **Select an action** area.
- Click the **Settings** button. The **Generate Report** dialog appears.

  Generate Report Settings

  Description – Enter descriptive text to identify this report in the **Scheduler**.

  Report – Select the desired report type from the drop down list.

  Data Source – Select the data source for the report. This section varies, depending on whether the **Report can specify data sources from multiple hierarchies** option was enabled on the **Report Editor**'s **General** tab for the selected report.

  If **Report can specify data sources from multiple hierarchies** was enabled, all of your @ptitude Analyst hierarchies display. Select multiple hierarchies, groups, and POINTs to include in your report.

  If **Report can specify data sources from multiple hierarchies** was not enabled, available options include:

  Primary Hierarchy – Use the POINTs from the currently selected primary hierarchy as the report's source.

  Last Upload – Use the POINTs last uploaded from the data collector as the report's source.

  ROUTEs (all available) – Enable the check box next to each ROUTE you would like to include.

  Workspaces (all available) – Enable the check box next to each Workspace you would like to include.

- If the Data Source is a Filtered Workspace, the Workspace will not be filtered again before report generation. The report is based on the Workspace in its current state.

Destination – Select the desired report destination from the drop down list. Available options include:

Email – Automatically sends an email of the report in HTML and PDF format to selected email recipients. Click the **Select** button to display the **Recipient Selection** dialog and select one or more contacts or groups of contacts.
HTML – Save to the subdirectory as an HTML file.
Open Window – Window opens automatically, displaying the report.
Printer / Landscape – Automatically prints in landscape mode.
Printer / Portrait – Automatically prints in portrait mode.

- The **Destination** selection is not used if the report is delegated to the Transaction Server. In this case, the report is always generated to HTML.

- Click **OK** to save report settings.

- Refer to the **SKF @ptitude Analyst Introduction and Global Features User Manual, Chapter 2, Getting Around in @ptitude Analyst / Contact Information** section for details on how to set up contacts and groups.

Measurement Management / Archive

Select the **Measurement Management / Archive** action to schedule the **Monitor** application to perform measurement management and archiving. This action checks the measurements in the current database, and either archives old data to the short term or long term status, or deletes old data from the database. This action is performed on measurements in the current database only. Refer to **SKF @ptitude Analyst Introduction and Global Features User Manual, Chapter 3, SKF Machine Monitor Application** for more information on the **Monitor**'s functions, including archiving data.

Send Message

Select the **Send message** action to send an email or text message to selected recipients when the associated event occurs.

- Click the **Settings** button to configure your message settings.

The **Send Message Settings** dialog appears.

- In the **Subject** text box, type the subject of the event's email message.
- In the **Message text** area, type the event's message to be sent as email and/or text messages.

- Text messages are often limited to a maximum number of characters. Check with the recipient's service provider to understand text message limitations.

- Click the **Select** button to display the **Recipient Selection** dialog and select one or more recipients from the list of available contacts and groups.
    - Refer to the **SKF @ptitude Analyst Introduction and Global Features User Manual, Chapter 2, Getting Around in @ptitude Analyst / Contact Information** section for details on how to set up contacts and groups.
- If you wish to include an HTML file with your email message, use the **Browse** button next to the **HTML content** text box and select an HTML file to include.
    - HTML content is not supported by text messaging.
- If you wish to include any other type of attachment with your email message, select the **Browse** button next to the **Attachments** text box to select the file you wish to include.
    - Attachments are not supported by text messaging.
- Enable the **Allow content from triggering event** check box to allow the default alarm message to override the **Message text** message when a triggering event occurs.
- Enable the **Send email** check box to send the message to the selected recipients as an email.
- Enable the **Send text to phone** check box to send the message to the selected recipients as a text message.
    - Texting limitations depend on the recipient's service provider.
- Click the **OK** button to save the message settings.
- Click the **Cancel** button to discard changes.

Microlog Inspector Settings

The **Customize / Microlog Inspector Settings** dialog allows you manage your Microlog Inspector devices, and set up Microlog Inspector profiles and assign them to Microlog Inspector Devices.

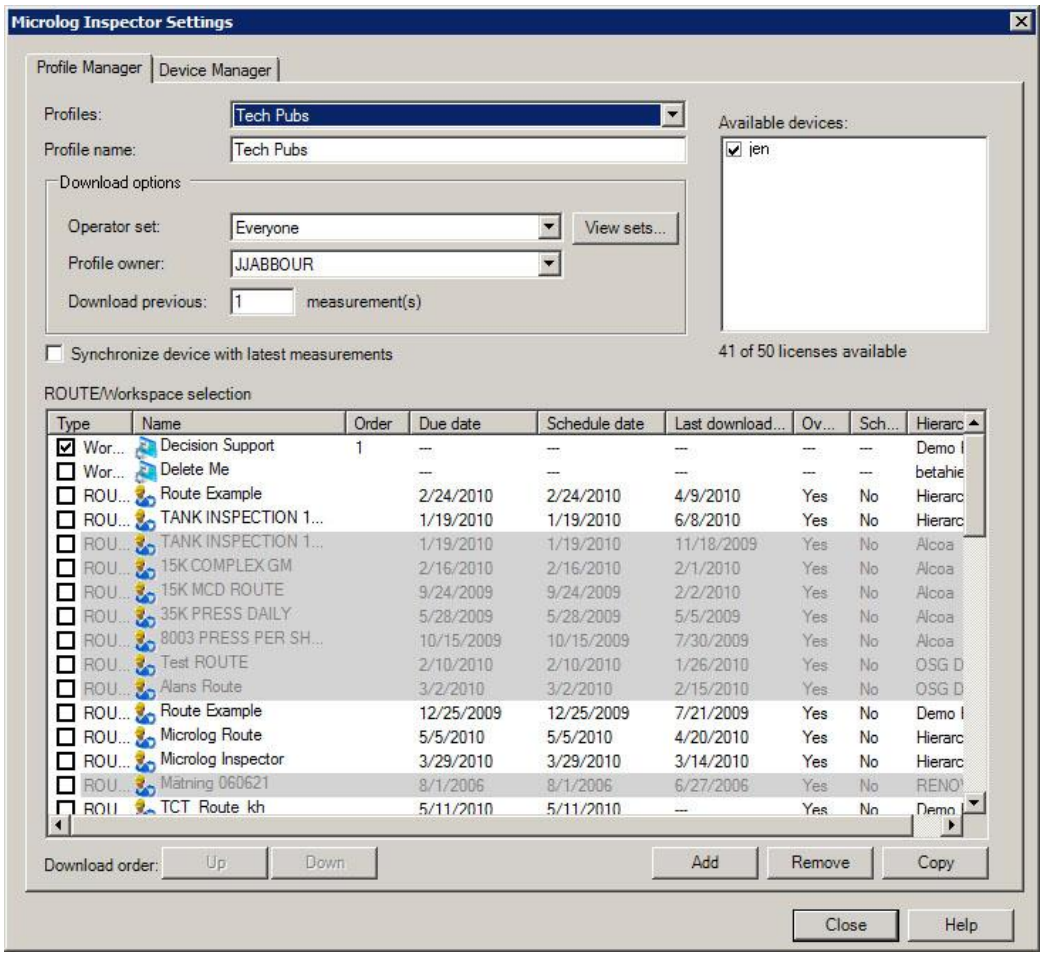


Figure 2 - 40.
The **Microlog Inspector Settings** dialog's **Profile Manager** tab.

Profile Manager

Overview

- Before setting up Microlog Inspector profiles, it is recommended that you set up your Microlog Inspector devices to communicate with @ptitude Inspector. Reference your Microlog Inspector User Manual for details.

Before you can transfer data between @ptitude Inspector and the Microlog Inspector device, you must first create a profile and assign it to the Microlog Inspector device to which you wish to download data.

A profile identifies all of the operator and ROUTE data collection information to be downloaded to the Microlog Inspector. You may create as many profiles as you wish,

but you may only assign one profile to a device at a time. You may also assign the same profile to several devices. The number of devices to which you can download profiles is limited by the number of available Microlog Inspector licenses purchased.

Creating a New Profile

To create a new profile:

- Select the **Customize** menu's **Microlog Inspector Settings** option. The **Microlog Inspector Settings** dialog's **Profile Manager** tab displays.
- Click the **Add** button located on the dialog's bottom right. The **Profiles** drop down list and **Profile name** text box display "**New Profile**."
- Define the new profile information using the following fields:

  Profile name – Assign the new profile a unique profile name for future identification purposes.

  Operator Set – Select a predefined operator set from the drop down list to assign operators and their specified operator preferences to the profile.

  - If necessary, click the **View Sets** button to create a new operator set or edit an existing operator set using the **Operator Set** dialog. For more details on creating operator sets, reference the **Customize / Database** section later in this chapter.

  Profile Owner – Select the analyst user that will be associated with data when it is uploaded from the Microlog Inspector.

  Download previous – Enter the number of previous measurement records (1 – 99) you wish to download to the device for field trending purposes (typically 10).

  Synchronize device with latest measurements – This setting is used in conjunction with the **Download previous** setting above. If the profile's route data is being collected by multiple Microlog Inspector devices, enable this option to download measurement record data that was uploaded from all the devices assigned this profile. On the Microlog Inspector, this allows you to view and trend all the previous data taken with all devices assigned the profile.

  - Depending on the size of the ROUTE, enabling **Synchronize device with latest measurements** may cause synchronization to take longer than normal.

  ROUTE/Workspace selection – Click a checkbox to select the ROUTEs / workspaces you wish to download with the profile. When you enable a ROUTE / workspace checkbox, the item moves to the top of the list. If several items are selected, the newest selection appears below previously selected items at the top of the list.

  Download order – Specify the order in which the selected ROUTEs / workspaces download to, and appear on, the assigned device. Highlight a selected ROUTE or workspace and click the **Up** and **Down** buttons to move the item up or down in the list of selected items.

- Click **Save** to save the profile. The **Profiles** list updates to reflect the newly added profile.

How to Assign a Profile to a Microlog Inspector Device

The **Profile Manager** dialog's **Available Devices** list displays on the top right. This list displays all Microlog Inspector devices that have been set up to communicate with @ptitude Inspector. In this list, devices displayed with an enabled checkbox are already assigned the current profile as selected in the **Profiles** drop down list, along with all devices not currently assigned a profile (indicated by their disabled checkbox). Directly below the **Available devices** list, the amount of available devices (licenses) versus total number of Microlog Inspector licenses purchased is displayed.

To assign a profile to a device:

- From the **Profiles** list, select the profile you wish to assign to a device. The **Available devices** list updates to display all the devices already assigned the selected profile (checkbox enabled), and all unassigned devices (checkbox disabled).
- Enable the checkbox next to your unassigned device(s) to which you wish to assign the selected profile.
- Click **Save**.

Now, when the device is docked and synchronization occurs, the assigned profile's data collection settings will download to the device.

Device Manager

The dialog's **Device Manager** tab allows you to manage all of the devices currently set up to communicate with your SKF @ptitude Inspector software. You can edit a device's time zone, remove a device, or create a download file of a device's current profile.

> ➢ For details on setting up a device to communicate with SKF @ptitude Inspector, reference your Microlog Inspector User Manual.

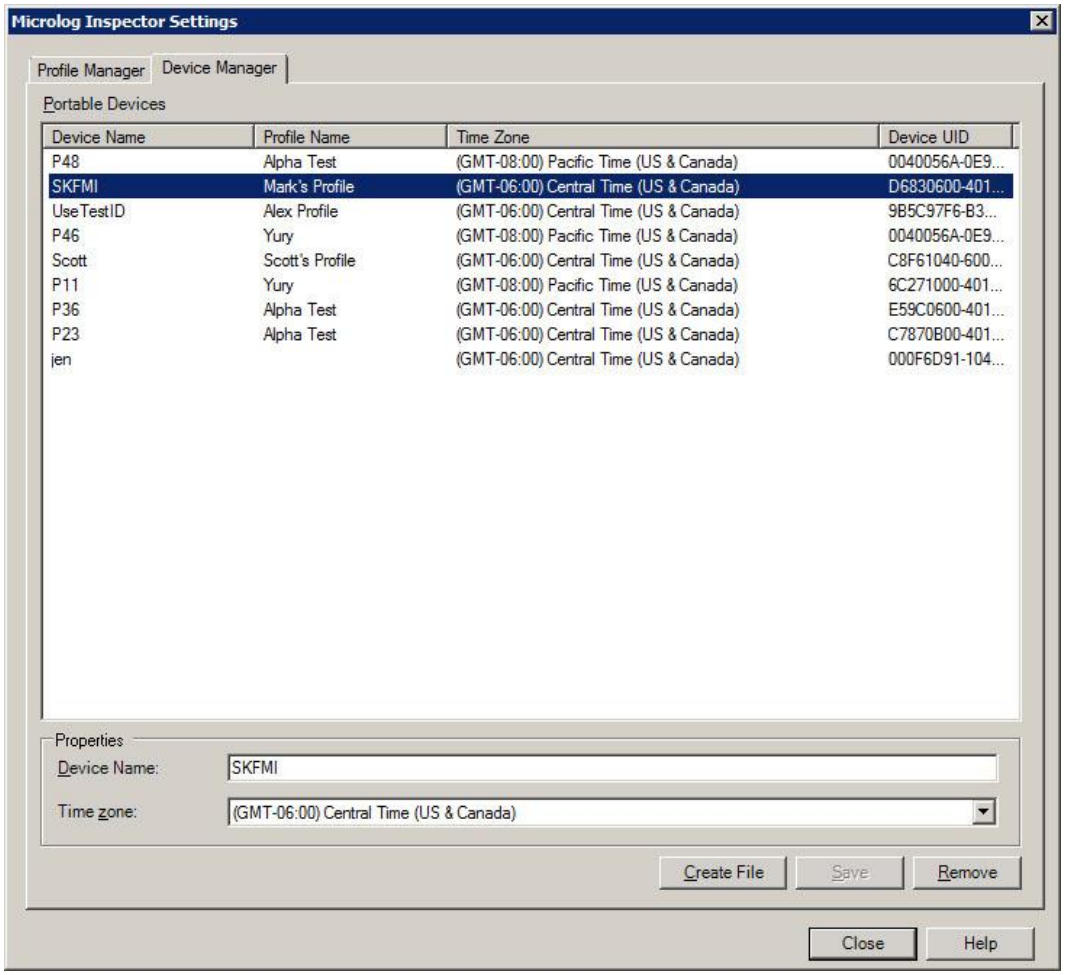


Figure 2 - 41.
The **Microlog Inspector Settings** dialog's **Device Manager** tab.

Fields include:

Portable Devices list – Identifies the devices currently set up to communicate with SKF @ptitude Inspector, and the profile, time zone, and unique identifier (UID) for each device. Displayed information includes:

- Reference your Microlog Inspector User Manual for details on device setup.

Device Name – The name assigned to the device during device setup.

Profile Name – The profile currently assigned to the device.

Time Zone – The time zone specified for the device. The time zone setting allows accurate data record date/time stamping for data communicated over time zones.

Device UID – The device's unique identifier (UID).

Properties – Fields in the **Properties** area allow you to edit the selected device's **Device Name** and **Time zone**.

Create File – Click to create a download file containing the selected device's profile. This is useful when the Microlog Inspector user does not have access to @ptitude Inspector. In this case, the download file is emailed to the device user, who then copies it onto the device. Reference your Microlog Inspector User Manual for details.

Save – Click to save your changes to the selected device.

Undo – Click to undo your changes to the selected device.

Remove – Click to remove the selected device from the **Portable Devices** list.

How to Unassign a Profile from a Microlog Inspector Device

You may wish to unassign a profile from a device, so that you can assign a different profile to it.

To unassign a profile from a device:

- From the **Profiles** list, select the profile name you wish to unassign from a device. The **Available devices** list updates to display all devices assigned the selected profile (checkbox enabled), and all unassigned devices (checkbox disabled).
- Disable the checkbox next to the device(s) from which you wish to unassign the selected profile.
- Click **Save**.

To remove an existing profile from the Profiles list:

- Select the profile name you wish to remove from the **Profiles** drop down list.
    - If the selected profile is assigned to any devices, you must first unassign the profile from the devices as described above. You must click **Save** after unassigning the profile.
- Click **Remove**. You are prompted to confirm the removal.
- Click **Yes**.

To create a copy of an existing profile:

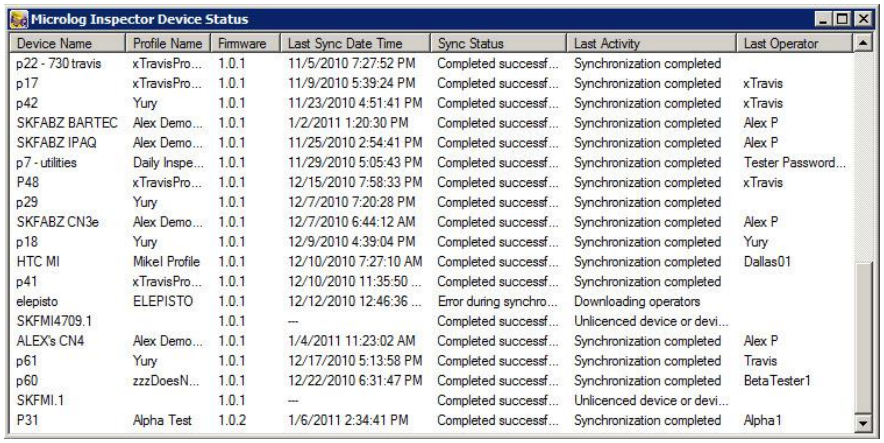
- Select the profile you wish to copy from the **Profiles** drop down list.
- Click **Copy**. A copy of the selected profile is created. A .# suffix is automatically added to the new profile's name (i.e., fanroom becomes fanroom.1).
- Click **Undo** immediately after a process to undo your changes and return to the previous state.

Microlog Inspector Device Status Window

Use the **Microlog Inspector Device Status** window to display all of the devices currently set up to communicate with your SKF @ptitude Inspector software.

To view the Microlog Inspector Device Status window:

- Select the **View** menu's **Microlog Inspector Status** option. The **Microlog Inspector Device Status** window displays.



Device Name	Profile Name	Firmware	Last Sync Date Time	Sync Status	Last Activity	Last Operator
p22 - 730 travis	xTravisPro...	1.0.1	11/5/2010 7:27:52 PM	Completed successf...	Synchronization completed	
p17	xTravisPro...	1.0.1	11/9/2010 5:39:24 PM	Completed successf...	Synchronization completed	xTravis
p42	Yury	1.0.1	11/23/2010 4:51:41 PM	Completed successf...	Synchronization completed	xTravis
SKFABZ BARTEC	Alex Demo...	1.0.1	1/2/2011 1:20:30 PM	Completed successf...	Synchronization completed	Alex P
SKFABZ IPAQ	Alex Demo...	1.0.1	11/25/2010 2:54:41 PM	Completed successf...	Synchronization completed	Alex P
p7 - utilities	Daily Inspe...	1.0.1	11/29/2010 5:05:43 PM	Completed successf...	Synchronization completed	Tester Password...
P48	xTravisPro...	1.0.1	12/15/2010 7:58:33 PM	Completed successf...	Synchronization completed	xTravis
p29	Yury	1.0.1	12/7/2010 7:20:28 PM	Completed successf...	Synchronization completed	
SKFABZ CN3e	Alex Demo...	1.0.1	12/7/2010 6:44:12 AM	Completed successf...	Synchronization completed	Alex P
p18	Yury	1.0.1	12/9/2010 4:39:04 PM	Completed successf...	Synchronization completed	Yury
HTC MI	Mikel Profile	1.0.1	12/10/2010 7:27:10 AM	Completed successf...	Synchronization completed	Dallas01
p41	xTravisPro...	1.0.1	12/10/2010 11:35:50 ...	Completed successf...	Synchronization completed	
elepisto	ELEPISTO	1.0.1	12/12/2010 12:46:36 ...	Error during synchro...	Downloading operators	
SKFMI4709.1		1.0.1	---	Completed successf...	Unlicenced device or devi...	
ALEX's CN4	Alex Demo...	1.0.1	1/4/2011 11:23:02 AM	Completed successf...	Synchronization completed	Alex P
p61	Yury	1.0.1	12/17/2010 5:13:58 PM	Completed successf...	Synchronization completed	Travis
p60	zzzDoesN...	1.0.1	12/22/2010 6:31:47 PM	Completed successf...	Synchronization completed	BetaTester1
SKFMI.1		1.0.1	---	Completed successf...	Unlicenced device or devi...	
P31	Alpha Test	1.0.2	1/6/2011 2:34:41 PM	Completed successf...	Synchronization completed	Alpha1

All devices currently set up to communicate with your SKF @ptitude Inspector software display, including the device name, the profile name, device's firmware version, last sync date / time, sync status, and last activity.

Customize / Database Operations

The **Database** dialog allows you to create custom group types and to define filter keys, coded notes, and operator names.

Creating Custom Group Types

Use the powerful **Customize** / **Database** dialog's **Group Types** tab to create custom Group Types to conveniently organize your machines, SETs, and POINTs to fit your application.

To create a custom Group Type:

- Select the **Customize** menu's **Database** option. The **Database** dialog displays.
- Select the **Group Types** tab.

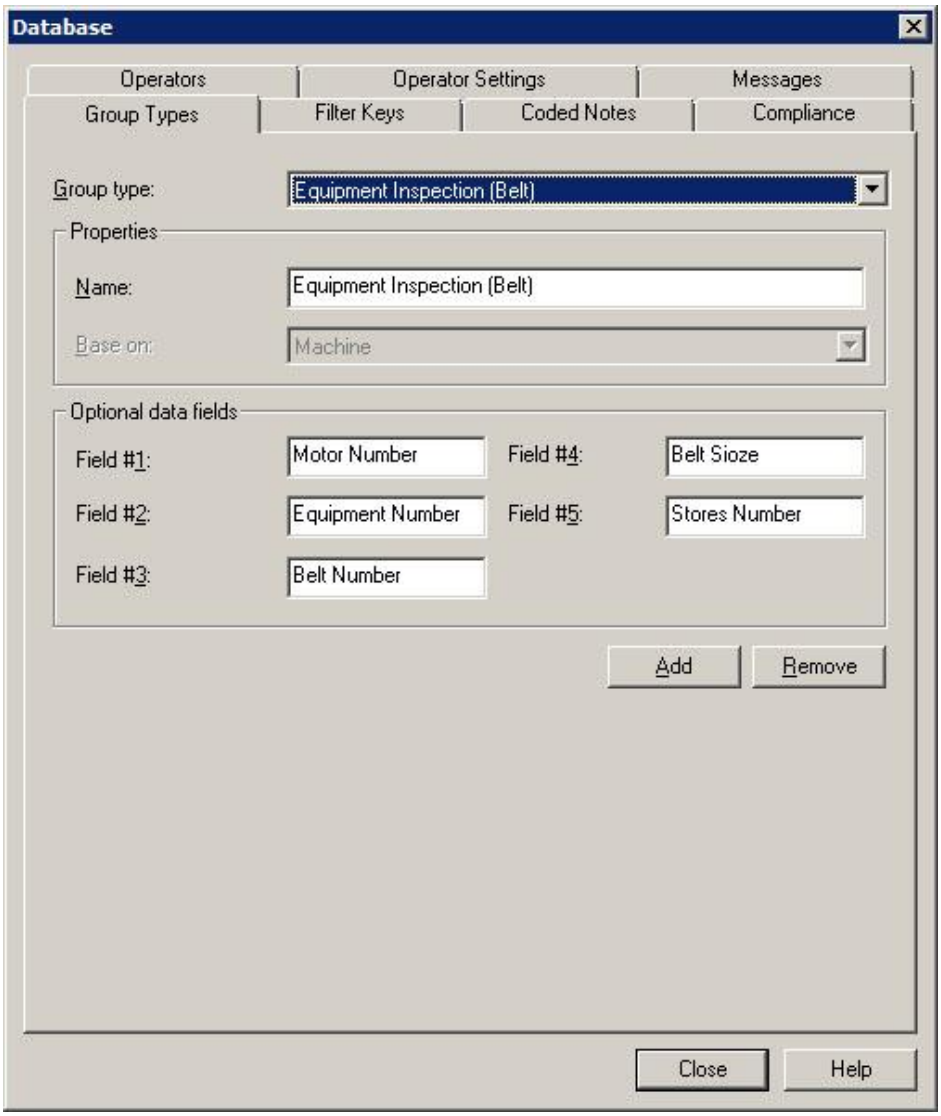


Figure 2 - 42.
The **Database** Dialog's **Group Types** Tab.

- Click the **Group Types** tab's **Add** button. The tab enters edit mode.
- Specify appropriate information into the following fields:

Group Type – This field is unavailable if you are adding a new Group Type. In the **Group type properties** area, the following fields are available:

Name – Specify a name to define your custom group type. For example, you may want to create a custom Group type named "pumps," for easy organization of all pump machinery.

Base on – Select a type to base the new group type on (SET or Machine).

> ➢ Once a Group Type has been "based on" a SET or Machine, the setting cannot be edited.

Once defined, the new Group Type will be available as a selection in the **Group Properties** dialog's **Type** list.

Optional data - Provides up to five fields to enter titles for additional data. Text entered in these fields appears as prompts for data entry when new Groups are created. This feature allows you to store detailed information with your Groups.

- Specify prompt titles that will appear in the **Group Properties / Details** tab.
    - Examples are "serial number," "manufacturer," "operator name," etc.
- Click the **Save** button to save the new Group Type and add it to the available types.
- Click the **Undo** button to undo changes.
- Click **Remove** to remove the current Group Type.
    - Group types currently in use cannot be removed.

Creating Filter Keys

Custom filter keys can be assigned to POINTs and/or Machines or SETs.

To add a new filter key:

- Select the **Customize** menu's **Database** option. The **Database** dialog displays.
- Select the **Filter Keys** tab.

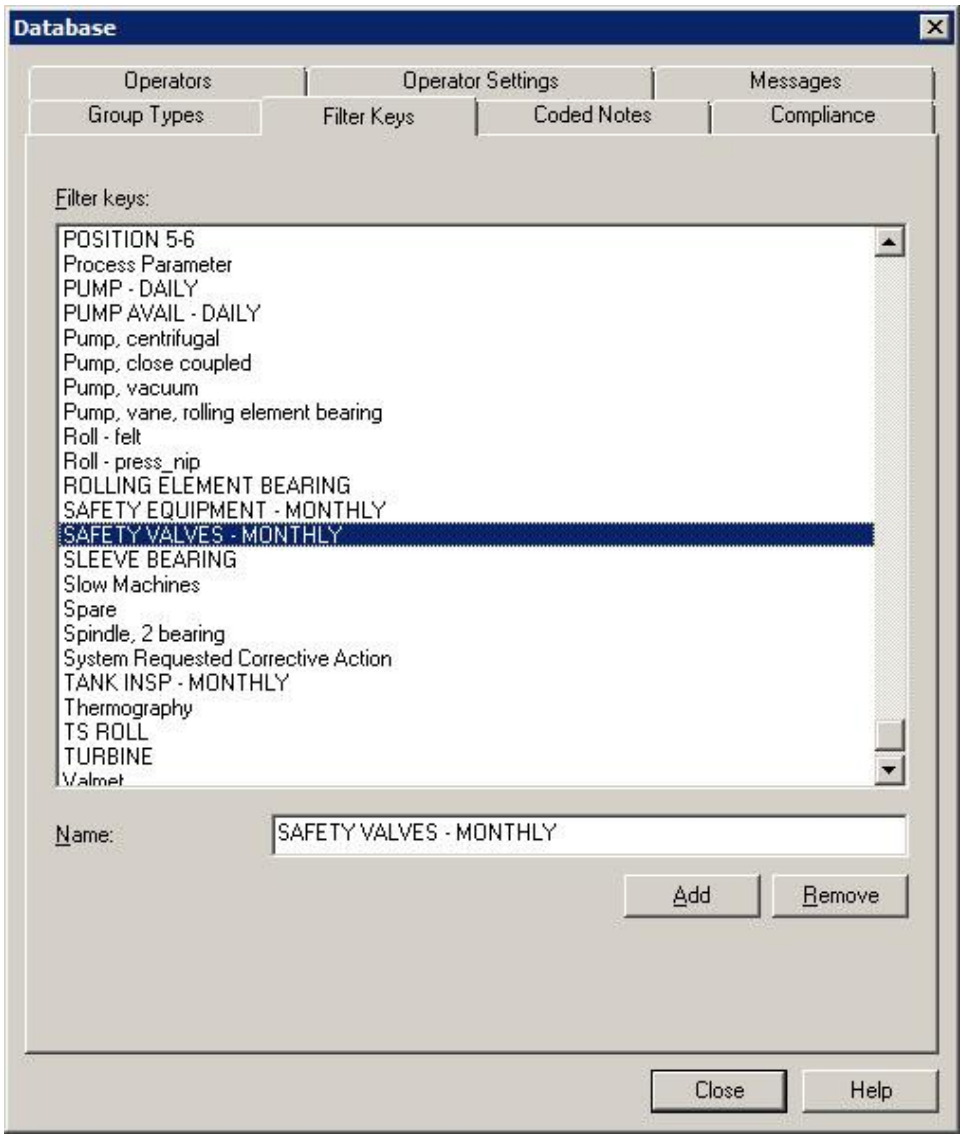


Figure 2 - 43.
The **Database** Dialog's **Filter Key** Tab.

- Click the dialog's **Add** button. The dialog enters edit mode.

Fields include:

Filter keys – Displays all previously defined filter keys.

Name – Specify filter key text.

- Click the **Save** button. The new filter key is now available for assignment.

Coded Notes

Coded notes are notes created and stored in @ptitude Inspector and automatically transferred from the software to the DAD. Create coded notes in the **Customize / Database** dialog's **Coded Notes** tab.

All previously defined coded notes appear in the tab's **Coded notes** area.

IMPORTANT

Never edit the database's Coded Notes list unless you intend to immediately re-download to all affected DADs. If coded notes stored in DADs do not sync up with the databases Coded Notes list, the wrong notes will be uploaded.

To add a new coded note:

- Click the **Add** button.

Fields include:

Coded notes – Displays all previously defined coded notes.

Note - Enter coded note text.

- Enter your descriptive text in the **Note** field and click the **Save** button.
- To cancel settings, click the **Undo** button.

To remove an existing coded note:

- Select the coded note from the **Notes** area.
- Click the **Remove** button.
    - The coded note, "**Machine Not Operating**," may **not** be removed.
    - If the listing order of the coded notes has changed, you must download the coded notes to *all* DADs to ensure synchronization.

Compliance

Compliance schedules enable you to manage data collection into a manageable workflow, by allowing you to define a time interval to identify when a POINT must be collected. The time interval allows data collection any time within the set interval.

For example, if data is scheduled to be collected for a POINT starting at 6 am on a daily basis, the POINT will become overdue only if data is not collected by the following day at 6 am.

Use the **Customize** / **Database** dialog's **Compliance** tab to define, edit, and delete compliance schedules.

All previously defined compliance schedules appear in the **Compliance** drop down list. To edit an existing compliance schedule, select a schedule from the **Compliance** drop down list and make necessary changes to the fields below.

To add a compliance schedule:

- Click **Add** to create a new compliance schedule.
- In the **Properties** area, edit the **Name**, **Start date**, **Start time**, and **Take data every** fields to customize the compliance schedule.

  Name – Enter a descriptive name for the compliance schedule.

  Start date – Enter the date the data collection interval is to begin.

  Start time – Enter the time of day the data collection interval is to begin.

  Take data every – Enter a numerical value to indicate how often data should be collected and select the appropriate units from list box options (**Second(s), Minute(s), Hour(s), Day(s)**). The POINT is tagged as overdue for data collection if the collection interval passes and no data is collected for the POINT.

  - The **Take data every** field is used to determine if a POINT is overdue for data collection.

Operators

Some DADs support operator names to tag measurement data with the corresponding operator's name. You can also create operator sets that group several operators together, making it easier to identify several operators in an associated group. Operator names are downloaded to the DAD.

- When collecting data, the data collection person logs in using their operator name.

Manage operator names and sets in the **Customize / Database** dialog's **Operator** tab.

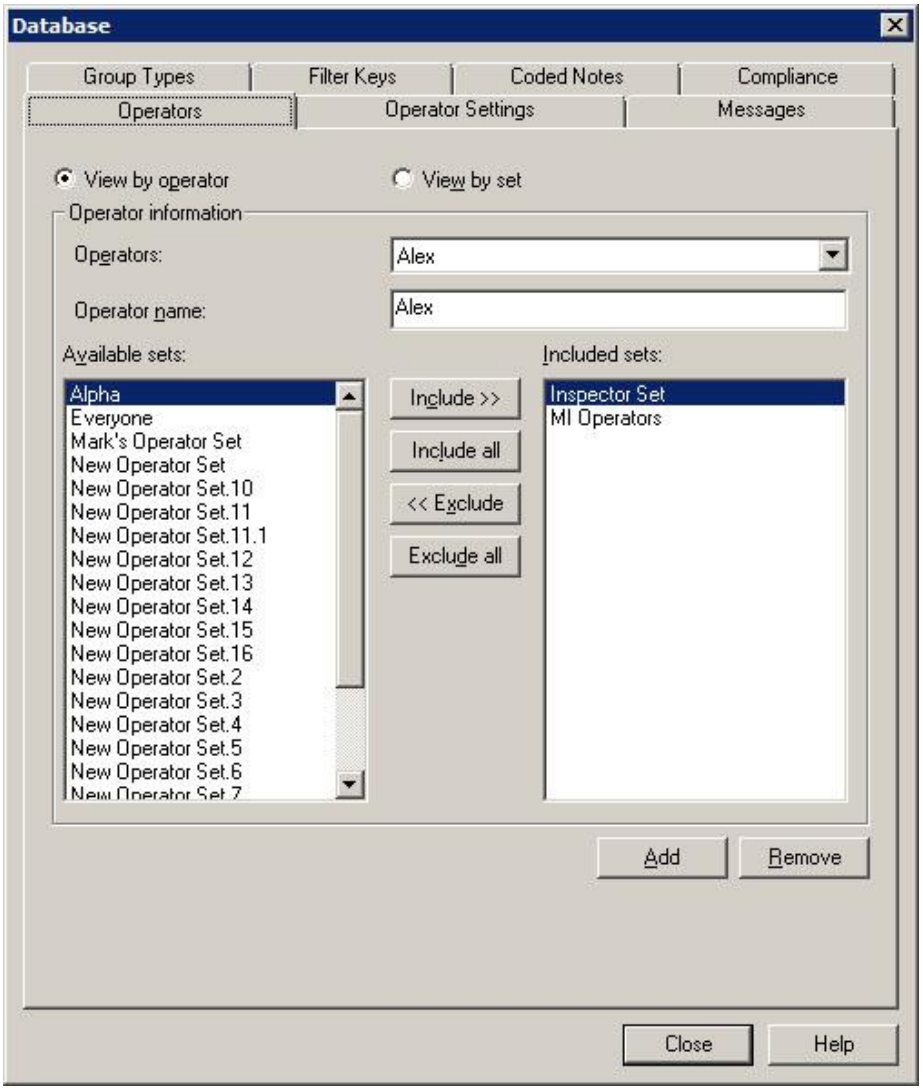


Figure 2 - 44.
The **Database** Dialog's **Operators** Tab in View by Operator Mode.

The **Operators** dialog has two modes:

View by operator – Select this mode to manage operators organized by operator name.

View by set – Select this mode to manage operators organized by operator set.

View by Operator Mode

In **View by operator** mode, all available operator names display in the **Operators** drop down list. In this mode, you can add or remove operators, and organize your operators into sets. For example, you can add operators to an "early shift" operator set.

To add a new operator:

- Click the **Add** button.
- Enter the new name in the **Name** field and click the **Save** button.

To add an operator to a set:

All previously created sets display in the **Available sets** area. The **Included sets** area displays sets to which the selected operator name is already assigned.

- Select the operator name from the drop down list.
- Select the desired set from the **Available sets** area.
- Click the **Include** button to include the selected operator name with the selected set. Click the **Include All** button to include the selected operator in *all* available sets.
- Click the **Save** button.

To remove an existing operator name:

- Select the operator name from the **Operator Names** window.
- Click the **Remove** button.

View by Set Mode

In **View by set** mode, all previously created operator sets display in the **Operator sets** drop down list. In this mode, you can add or remove sets, and organize your operators into sets. For example, you can create an operator set for the early shift, and include appropriate operators into the set.

To create a new operator set:

- Select **New Set** from the drop down list.
- Enter the new set's name in the **Set name** field and click the **Save** button.

All available operators display in the **Available operators** area. All operators already included in the set display in the **Included Operators** area.

- Use the **Include, Include All, Exclude,** and **Exclude All** buttons to organize operators into the appropriate sets.
- Click the **Save** button to save you changes.

Operator Settings

Operator settings are the operator preferences used on the MARLIN and Microlog Inspector devices. In @ptitude Inspector, the system administrator may assign these operator preferences, unique to each operator, which are then downloaded to the device.

> ➢ Operator names must first be set up in the **Customize / Database** dialog's **Operators** tab.

Manage operator settings in the **Customize / Database** dialog's **Operator Settings** tab.

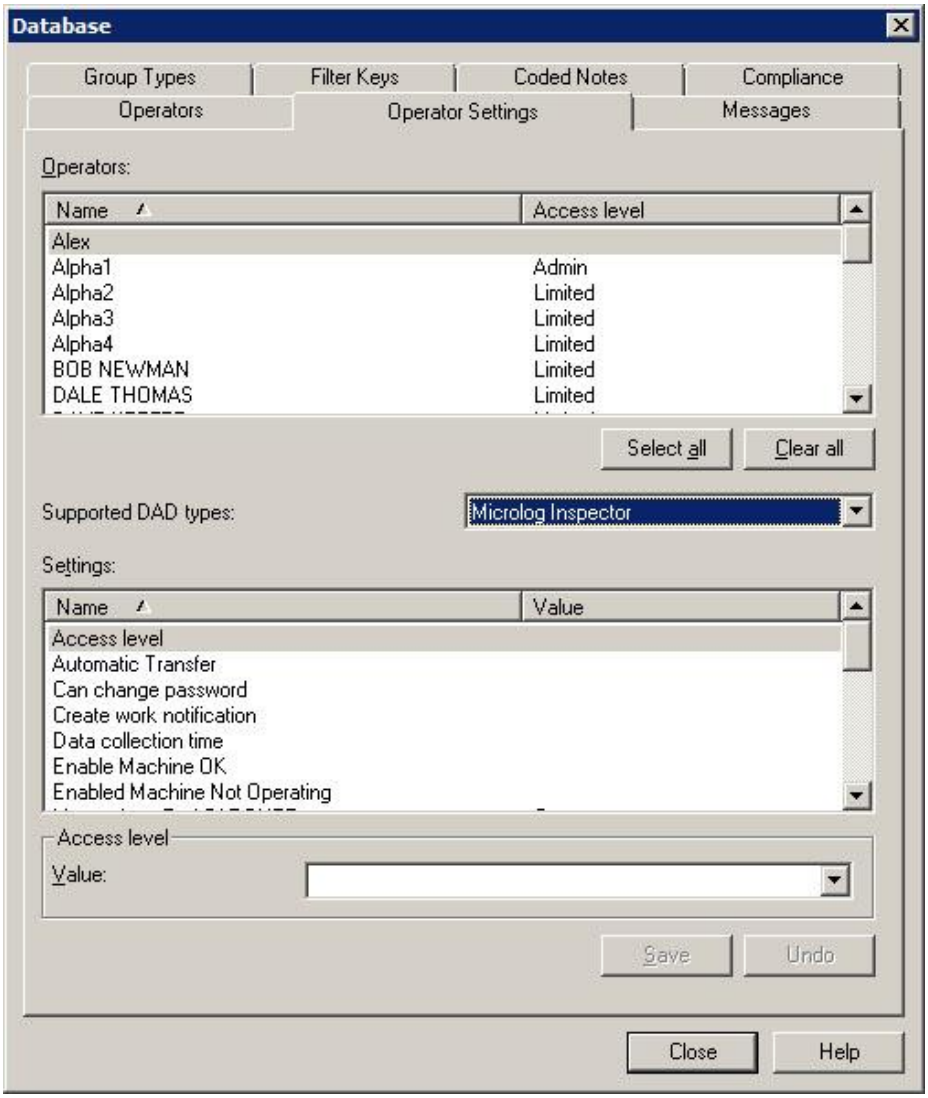


Figure 2 - 45.
The **Database** Dialog's **Operator Settings** Tab.

To set operator preferences:

- Select an operator name from the **Operators** list for which to assign operator preferences. Click **Select All** to assign global preferences for all existing operator names.
- Select a device type from the **Supported DAD types** drop down list. Select **All**, **MARLIN**, or **Microlog Inspector**. The **Settings** list below displays differently depending on the selected device type.
- Select settings from the **Settings** list to assign preferences for the selected operator(s).
- Select the desired preferences settings from the **Value** drop-down list.
- Click **Save** to save the current operator preferences for the selected operator(s).
- Click **Undo** to cancel changes made to operator preferences.

Settings Definitions

Access Level - Specify one of five access levels for the operator:

For MARLIN Users:

Review - Access to data review operations only. Cannot collect data, add/modify/delete hierarchy items, add/modify/delete operators, or restore the database using the **Restore** option.

Limited - Access to data collection operations only (data collection, review, and upload).

Cannot add, modify, or delete hierarchy items. Cannot add, modify, or delete operators.

Operator – Access to data collection operations only (data collection, review, and upload), and the ability to reset unit. Cannot add, modify, or delete hierarchy items. Cannot add, modify, or delete operators.

Full - Access to all MARLIN operations with the exception of adding, modifying, and deleting operators.

Admin - Access to all MARLIN operations including the ability to add, modify, and delete operators.

The following table indicates which operations are available for each access level on the MARLIN.

Operation					
Add Item	Admin	Full			
Modify Item	Admin	Full			
Delete Item	Admin	Full			
Collect	Admin	Full	Operator	Limited	
Review	Admin	Full	Operator	Limited	Review
Reset	Admin	Full	Operator		
Report	Admin	Full	Operator	Limited	Review
Transfer	Admin	Full	Operator	Limited	
Operator / Admin.	Admin				
Operator / non-Admin	Admin	Full	Operator	Limited	Review
Back-up	Admin	Full	Operator	Limited	Review
Restore	Admin	Full	Operator	Limited	

For Microlog Inspector Users:

Review - Access to data review operations only. Cannot collect data, configure network settings, or restore the database using the **Restore** option.

Limited - Access to data collection operations only (data collection, review, and upload).

Operator – Access to data collection operations only (data collection, review, and upload), and the ability to reset unit.

Full - Access to all Microlog Inspector operations with the exception of configuring network settings and database location.

Admin - Access to all Microlog Inspector operations.

The following table indicates which operations are available for each access level on the Microlog Inspector.

Operation					
Settings – Network Setup	Admin				
Settings – Database - Location	Admin				
Settings – Database – Clear	Admin	Full			
Settings – Database – Reset	Admin	Full	Operator		
Settings – Database – Backup	Admin	Full	Operator	Limited	Review
Settings – Database – Restore	Admin	Full	Operator	Limited	
Settings – Tag Harvester	Admin	Full			
Settings – View Options	Admin	Full	Operator	Limited	Review
Settings – WMCD Setup	Admin	Full	Operator		
Settings – Temp Gun Setup	Admin	Full	Operator		
Settings – RFID Setup	Admin	Full	Operator		
Collect	Admin	Full	Operator	Limited	
Review	Admin	Full	Operator	Limited	Review
Synchronize	Admin	Full	Operator	Limited	Review

Automatic Transfer – (MARLIN only) When enabled, docking the MARLIN data manager launches "SyncData," and data is automatically synchronized between the unit and @ptitude Inspector software. Undocking the unit closes SyncData.

> ➢ Automatic Transfer is only available using the **ActiveSync** communication type. Refer to **Chapter 4, Data Collection ROUTEs and Other Data Transfer Operations**, for more information.

Create Work Notification – (MARLIN only) Enable this option to allow the operator to create work notifications.

Data Collection Time – Allows the administrator to customize the amount of time allowed between measurement data collected for the same POINT. The default setting is 45 minutes. For example, if you use the default **Data Collection** limit setting (45 minutes), and download a ROUTE, collect and save data for POINT 1, then collect another data sample for the same POINT within the specified 45-minute limit, a warning displays. The warning indicates the previous measurement was saved less than 45 minutes ago, and prompts you to either overwrite the previous data with the newly collected data, or to cancel the action.

To set the data limit:

- Select the data collection limit from the drop down list's options (0-1500 seconds, in 15 minute increments). Enter "0" to disable the warning.

Verification Mode – Specify whether to display the Feedback review display during data collection. Choices are, **Always**, **On Alarm,** or **Never**.

Can change Automatic Transfer – When enabled, allows the operator to enable / disable the **Automatic Transfer** preference on the **Modify Operator** display. Default is disabled.

Enable Machine OK – When enabled, this button provides the operator a method to quickly describe the overall machine condition as "OK", without collecting current data on the machine's measurements. For machines with **Single** and **Multi-Select Inspection** POINTs, the **Machine OK** button specifies and stores the first non-alarm **Inspection Result** for each of the machine's Inspection POINTs, then displays the Machine display for the next machine at the same hierarchy level. If no more machines exist at the same hierarchy level, the hierarchy display appears with the current machine's ID highlighted.

> ⚠ ***WARNING!***
> ***Machine OK should not be used during any ATEX related inspections. If ATEX inspections are planned, it is recommended that Machine OK be disabled.***

Enable Machine Not Operating – (Microlog Inspector only) When enabled, this button provides the operator a method to note that the machine is not operating. Determines whether the operator will have access to the **Machine Not Operating** button in the **Machine** dialog. Select **On** or **Off**.

Can Change Password – When enabled, the Microlog Inspector / MARLIN operator can change the password. If disabled, the password must be changed in @ptitude Inspector.

Messaging – (Microlog Inspector only) When enabled, the following warnings / messages display on the device:

End of ROUTE
Zero Acceleration / Velocity Reading (warning)
Show Sets While Collecting
Save Data as Current (warning)

Numeric Range Protection – (Microlog Inspector only) When enabled, collected data above full scale or below minimum scale is not accepted.

Password – For MARLIN, enter the password the operator will use to log in to the MARLIN. For the Microlog Inspector, enter the default password the operator will use to sign in for the first time, upon which they will be prompted to enter a unique password for future sign ins.

Reset Password – When enabled, the operator must sign in using the default password. Microlog Inspector operators are prompted to change their password upon initial sign in. This option is useful when operators forget their password.

Scan And Go To First POINT – (Microlog Inspector only) When enabled, after an operator scans a Machine, the machine's first POINT automatically displays.

Scan Required to Collect – Enable to require the operator to collect data using the scanner

Show Previous Data – Enable to allow the operator to view the previous data prior to collecting new data.

SPC Enabled - When enabled, 18 **S**tatistical **P**rocess **C**ontrol rules apply to process trends.

View FFTs – (Microlog Inspector only) Enable to allow the operator to view FFTs on the device.

View Overdue – Specify whether to display **All** POINTs or **Overdue** POINTs on the hierarchy display.

View Tree Element – Specify the hierarchy items you would like to show on the hierarchy display. Choices are **POINT only** , **SET+POINT**, **Machine+POINT**, or **All**.

View Work Notification History – Enable this option to allow the operator to view historical work notifications.

Once you have set the operator preferences, you can download them to the device using the **Config** or **Clear** buttons on **Transfer** dialog's **Status** tab. Refer to **Chapter 4, Data Collection ROUTEs and Other Data Transfer Operations**, for more information.

- Any operator preferences that are set on the device will not be uploaded to @ptitude Inspector, and will be overwritten with the operator preferences set up in @ptitude Inspector on the next download.

Messages

Use the **Customize** / **Database** dialog's **Messages** tab to create shared (public) messages to assign to machines and POINTs to automatically display important instructions and information.

All previously defined messages appear in the **Instruction messages** drop down list.

To create a public Message:

- Select the **Customize** menu's **Database** option. The **Database** dialog displays.
- Select the **Messages** tab.
- Click the **Messages** tab's **Add** button. The tab enters edit mode.
- Specify appropriate information into the following fields:

Name – Specify a name to define your custom message.

Format – Select the message format from the drop down list. Available options include:

Free form – Allows you to manually type in the summary and content for your message.

Hyperlink – Allows you to create a link to an existing file on your **MARLIN / Microlog Inspector**. During data collection, when the specified message condition is met, the originating application (Word, Acrobat) launches the machine's hyperlinked message file on the **MARLIN / Microlog Inspector** unit. When the message condition occurs, an **Instruction (i)** button becomes available (un-ghosts) on the **MARLIN / Microlog Inspector**'s display. Tap this **Instruction (i)** button to display the message. This feature allows you to associate detailed instructions with particular machines or POINTs while still keeping downloads small and efficient.

- The message file and the application used to create the message must both be present on the **MARLIN / Microlog Inspector**. Message files are downloaded to the **MARLIN / Microlog Inspector** using ActiveSync. Reference your ActiveSync User Manual for more information.

Summary – Type in text summarizing your instruction message for easy recognition. For example, if you have a message that details specifics about a group of machinery, your summary may read, "FD Fan Data Collection Information."

Content – Enter your complete instruction message in the content text area. Using the above example, your instruction message content would include detailed data collection information, specific to the current group. For example, your message may read "Ensure sensor is properly mounted before collecting data, etc."

- Click the **Save** button to save the new message and add it to the available public messages.
- Click the **Undo** button to undo changes.
- Click **Remove** to remove the current message.
  - Messages currently in use cannot be removed.

Alarm Database

Use the **Alarm Database** to create alarms that can be assigned to one or more POINTs. Created alarms can be re-assigned and edited.

To access the Alarm Database dialog:

- Select the **Customize** menu's **Alarm Database** option. The **Alarm Database** dialog displays.

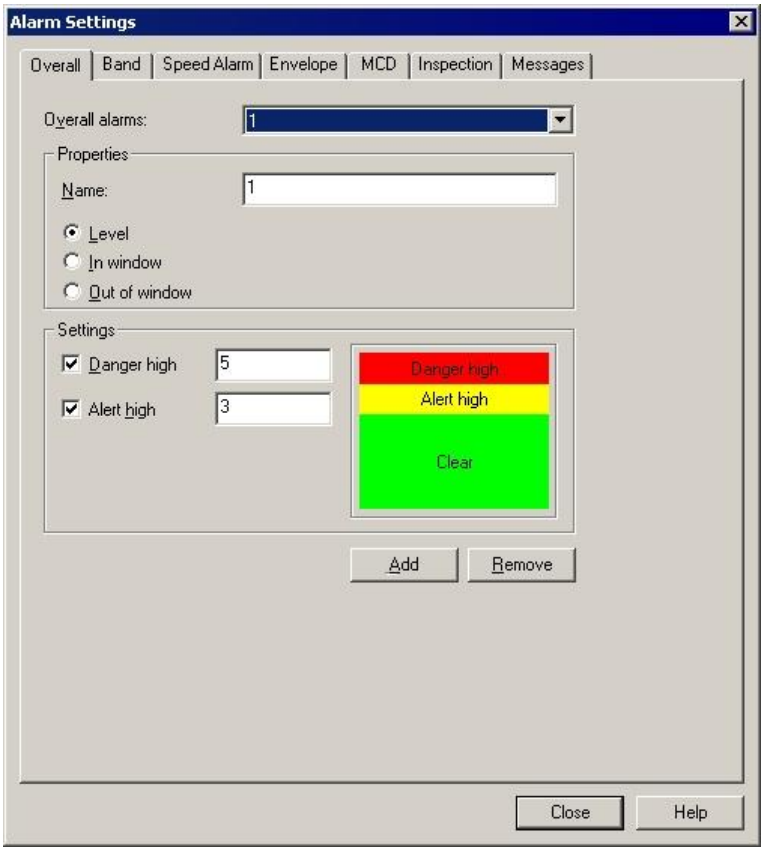


Figure 2 - 46.
The **Alarm Database** Dialog's **Overall** Tab.

Alarm Database - Overall

Existing alarms may be edited or removed from the database. The **Overall** tab allows you to create, edit, or remove shared Overall alarms.

To create a new alarm:

- Click the tab's **Add** button. The **Overall alarms** field displays "**New Overall Alarm**" to indicate that you have created a new alarm.
- In the **Name** field, assign the new alarm a unique name.
    - ➢ Once the editing process begins, the **Overall alarms** field is no longer accessible. You must complete and **Save** your edits or cancel them by clicking the **Undo** button.

- Click **Save**. The **Overall alarms** field now displays the new alarm name you specified.

You can also adjust the alarm's **Properties** and **Settings** in this tab. The current settings graphically display in the tab's **Settings** area.

To edit or create Overall Alarm Properties and Settings:

Properties – Select the type of Overall Alarm by clicking the desired option button. Choose from:

Level - Measurements *exceeding* the specified alert and danger **Settings** will result in an alarm condition.

In Window - Measurements *falling within* the specified alert low, danger, and alert high **Settings** will result in an alarm condition.

Out Of Window - Measurements *falling outside* the specified danger low, alert low, alert high, and danger high **Settings** will result in an alarm condition.

Settings – Select the levels you wish to include by clicking each checkbox.

- The availability of the levels, their checkboxes, and their text fields is based on the type of Overall Alarm selected in the **Properties** area.

- Enter the desired values for each available alarm level.
- Click the **Save** button to save your alarm settings.

To remove an existing alarm from the database:

- Select the desired alarm from the drop down list.
- Click the **Remove** button. A confirmation dialog displays.
- Confirm removal. The selected alarm is permanently removed from the database.

- An alarm cannot be removed if it is currently assigned to one or more POINT. A warning dialog displays if you attempt to remove a currently assigned alarm.

Alarm Database - MCD

Existing alarms may be edited or removed from the database. The **MCD** tab allows you to create, edit, or remove shared MCD alarms.

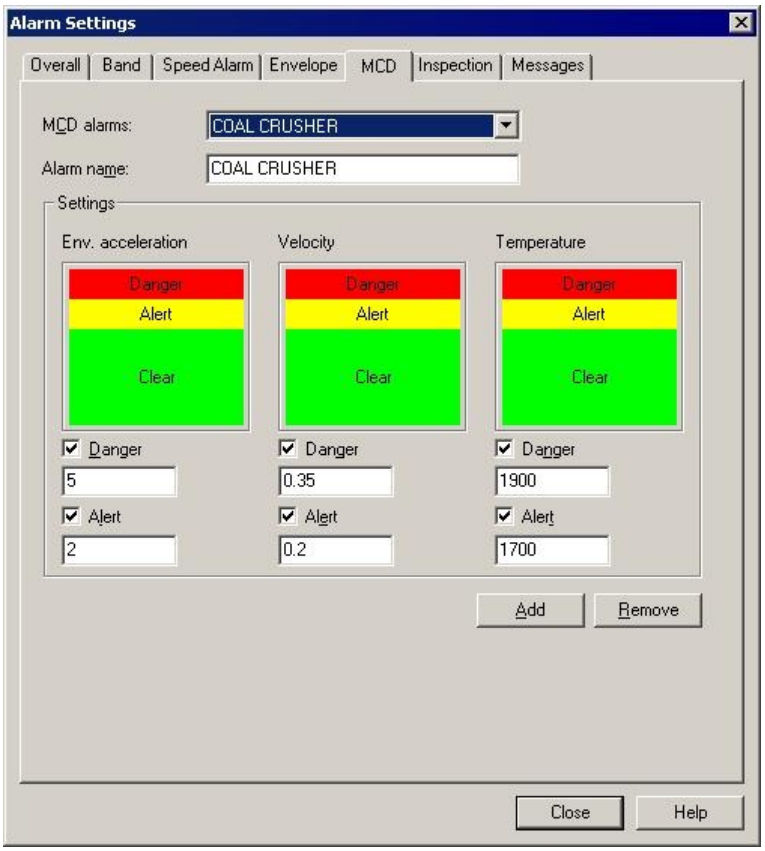


Figure 2 - 47.
The **Alarm Database** Dialog's **MCD** Tab.

To create a new alarm:

Click the tab's **Add** button. The **MCD alarms** field displays "**New MCD Alarm**" to indicate that you have created a new alarm. In the **Alarm name** field, assign the new alarm a unique name.

> ➢ Once the editing process begins, the **MCD alarms** field is no longer accessible. You must complete and **Save** your edits or cancel them by clicking the **Undo** button.

- Click **Save**. The **MCD alarms** field now displays the new alarm name you specified.

You can also adjust the alarm's **Settings** in this tab. The current settings graphically display in the tab's **Settings** area.

- Enter your **Settings**.
- Click the **Save** button to save your alarm settings.

To remove an existing alarm from the database:

- Select the desired alarm from the drop-down list.
- Click the **Remove** button. A confirmation dialog displays.
- Confirm removal. The selected alarm is permanently removed from the database.
    - ➢ An alarm cannot be removed if it is currently assigned to one or more POINT. A warning dialog displays if you attempt to remove a currently assigned alarm.

Alarm Database - Inspection

Existing alarms may be edited or removed from the database. The **Inspection** tab allows you to create, edit, or remove shared Inspection alarms.

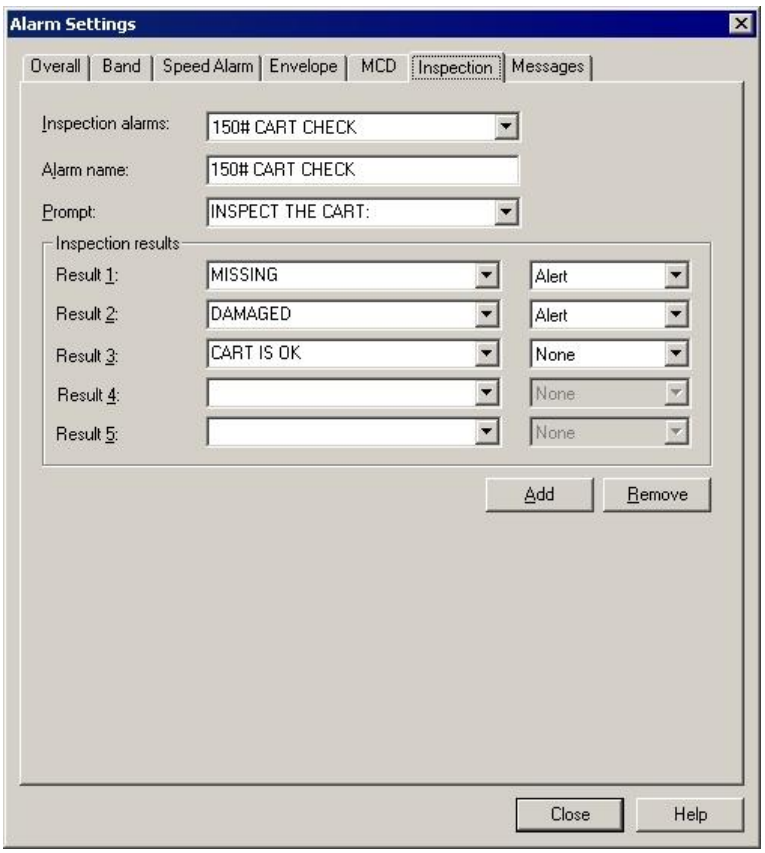


Figure 2 - 48.
The **Alarm Database** Dialog's **Inspection** Tab.

To create a new alarm:

Click the tab's **Add** button. The **Inspection alarms** field displays "**New Inspection Alarm**" to indicate that you have created a new alarm. In the **Alarm name** field, assign the new alarm a unique name.

> ➢ Once the editing process begins, the **Inspection alarms** field is no longer accessible. You must complete and **Save** your edits or cancel them by clicking the **Undo** button.

- Click **Save**. The **Inspection alarms** field now displays the new alarm name you specified.

You can also adjust the alarm's **Prompt** and **Inspection Results**.

- Click to place the cursor in the appropriate field you wish to edit (Prompt field or Inspection Result field). Enter the new Prompt or Inspection Result.
- Click the **Save** button to save your new Inspection POINT setup.
- Click the **Save** button to save your alarm settings.

To remove an existing alarm from the database:

- Select the desired alarm from the drop-down list.
- Click the **Remove** button. A confirmation dialog displays.
- Confirm removal. The selected alarm is permanently removed from the database.

> ➢ An alarm cannot be removed if it is currently assigned to one or more POINT. A warning dialog displays if you attempt to remove a currently assigned alarm.

Alarm Database - Messages

Use the **Customize** / **Alarm Database** dialog's **Messages** tab to create shared (public) messages to assign to machines and POINTs to automatically display important information.

> ➢ Messages created on the Alarm Database / Messages dialog only apply to alarms. To create messages for specific machines and POINTs, reference the **Customize / Database Operations** section.

All previously defined messages appear in the **Alarm messages** drop down list.

To create a public Message:

- Select the **Customize** menu's **Alarm Database** option. The **Alarm Database** dialog displays.
- Select the **Messages** tab.
- Click the **Messages** tab's **Add** button. The tab enters edit mode.
- Specify appropriate information into the following fields:

Name – Specify a name to define your custom message.

Format – Select the message format from the drop down list. Available options include:

Free form – Allows you to manually type in the summary and content for your message.

Hyperlink - Allows you to create a link to an existing file on your **MARLIN / Microlog Inspector**. For example, you can store a large .doc file on your MARLIN that will automatically launch when the specified alarm condition is encountered on the ROUTE during data collection. This allows you to associate detailed alarm messages with particular machines while still keeping downloads small and efficient.

- The message file and the application used to create the message must both be present on the **MARLIN / Microlog Inspector**. Message files are downloaded to the **MARLIN / Microlog Inspector** using ActiveSync. Reference your ActiveSync User Manual for more information.

Summary – Type in text summarizing your alarm message for easy recognition. For example, if you have an alarm message that details shut down instructions in the case of an overall danger high alarm level, your summary may read, "Emergency Shut Down Instructions."

Content – Enter your complete alarm message in the content text area. Using the above example, your alarm message content would include detailed shut down instructions, and any other pertinent information required in the case of the triggered alarm type.

- Click the **Save** button to save the new message and add it to the available public messages.
- Click the **Undo** button to undo changes.
- Click **Remove** to remove the current message.
  - Messages currently in use cannot be removed.

Statistical Alarms Wizard

Statistical Overall Alarms Wizard

Overview

For POINTs in a **Workspace** window, the **Statistical Overall Alarms Wizard** guides you through a process that automatically generates accurate overall alarm settings based upon historical measurement data.

- The Statistical Overall Alarms Wizard only operates on an active Workspace window.

To initiate the wizard:

- Open the desired Workspace window.
- Select the **Customize** menu's **Alarm Attributes** / **Statistical Overall...** option. The wizard's Introduction dialog displays.

Introduction

The **Introduction** dialog is the first screen in the **Statistical Overall Alarms Wizard**. The measurement data used to generate the alarm values is generated from the POINTs included in the selected Workspace (identified in the **Workspace** field).

- From the **Workspace** drop down list, select the Workspace from which you would like to use to generate the alarm values.
- From the **Full scale units** drop down list, select a measurement unit. The **Full scale units** drop down list displays a list of the full scale units for POINTs in the selected workspace. Only POINTs with the selected measurement unit are used to generate alarm values.
- Click the Save processing details to "Statistical Overall Alarms.log" check box to create and save a log file.
- Click **Next** to continue.

Alarm Assignment

Select the calculation method to use to determine alarm values.

Individual POINTs – Select to use each POINT's readings to generate a unique set of alarm values for the POINT. The resulting values are assigned to each POINT as a *private* alarm.

> ➢ This operation generates and assigns a private alarm for **each** POINT.

Across all POINTs – Select to use the readings for all the POINTs to generate one set of alarm values that is assigned to each POINT included in the calculation. The resulting values are saved as a *shared* alarm.

> ➢ If **Across all POINTs** is selected, a **Review Page** displays before alarms are applied, allowing verification and confirmation.

- Click **Next** to continue.
- Click **Back** to return to the previous screen.
- Click **Cancel** to exit the wizard.

Measurement Selection

Determine the method for selecting the measurement data to generate overall alarm values.

All measurements – Select to use all measurement data to generate the overall alarm values.

Measurements in this date range – Select and enter a date range to use all measurements in the indicated date range to generate the overall alarm values.

Last fixed number of measurements – Select and enter number of measurements to use the specified number of measurements to generate overall alarm values.

Limits – Allow you to filter abnormal measurements from the calculation:

Max. Amplitude- Enter the maximum amplitude of the overall value to include in calculation.

Min. Amplitude – Enter the minimum amplitude of the overall value to include in calculation.

Min Measurements – Enter the minimum number of the POINT's measurements to be included in calculation.

- Only POINTs that have the number of indicated minimum measurements (or more) are included in the calculation.
- Min. Measurements field is not available if measurement selection is "**Last fixed number of measurements**."

Channel – Enter the channel number of multi-channel POINTs to included in the calculation.

Enable outlier removal – An "outlier" refers to data that is not typical, or is outside a specified data measurement range. When the **Enable outlier removal** check box is enabled, measurement values that fall outside the outlier range are excluded from the calculation.

- Outlier detection only occurs if the number of measurements is greater than or equal to the **Min Measurements** specification.

Outlier threshold factor – Enter a threshold factor (1.0 to 5.0) to calculate the lower and upper limits of the outlier range (outlier threshold). The threshold factor is multiplied by the standard deviation to calculate the outlier threshold. The default threshold factor is 3.0.

- Click **Next** to continue.
- Click **Back** to return to the previous screen.
- Click **Cancel** to exit the wizard.

Alarm Type

Select the type of overall alarm to generate:

Level – Provides two alarm levels (**Alert High** and **Danger High**). An appropriate alarm registers if the measured value is greater than either of the alarm levels.

Out of Window – Provides four alarm levels (**Danger High, Alert High, Alert Low, Danger Low**). An appropriate alarm registers if the measured value progresses out of the alarm window (does not fall between the alert high and alert low alarm settings).

- Click **Next** to continue.
- Click **Back** to return to the previous screen.
- Click **Cancel** to exit the wizard.

Generation Parameters

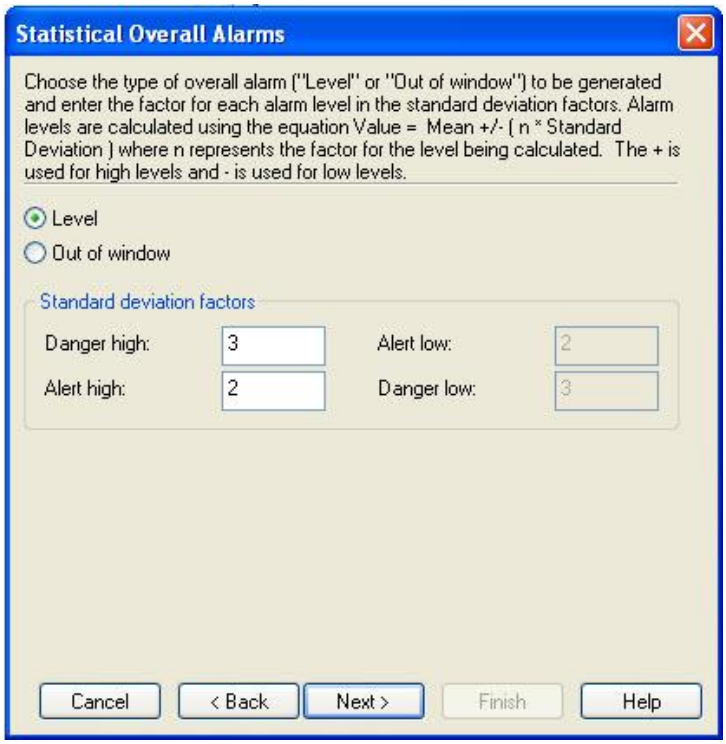


Figure 2 - 49.
The **Statistical Overall Alarms Wizard**'s Generation Parameters Screen.

Note that you need not perform the standard deviation math. The wizard's default values have been selected to produce overall alarms that work well for most situations. However, if you wish to conform the overall alarms closer, enter smaller numbers. To conform the overall alarms further away, enter higher numbers. After completing the wizard, view your trend plots and make adjustments as necessary.

- If necessary, edit the standard deviation information to be used in the overall alarm calculations.

Standard deviation factors

Danger High – Value to be multiplied by the standard deviation to establish the danger high level.

Alert High - Value to be multiplied by the standard deviation to establish the alert high level.

Alert Low – Value to be multiplied by the standard deviation to establish the alert low level.

Danger Low – Value to be multiplied by the standard deviation to establish the danger low level.

- Click **Next** to continue.
- Click **Back** to return to the previous screen.
- Click **Cancel** to exit the wizard.

Minimum Alarm Values

Set the minimum alarm values to be used in the calculation. If the standard deviation is small, the minimum alarm values allow you to set a wider range, minimizing the chance for bad alarms to occur.

Enter the minimum values for **Danger High**, **Alert High**, **Alert Low**, and **Danger Low**.

- Click **Next** to continue.
- Click **Back** to return to the previous screen.
- Click **Cancel** to exit the wizard.

Process

Click the **Next** button to begin the overall alarm calculations. Process progress displays along with the number of POINTs processed.

- Click **Next** to continue.
- Click **Back** to return to the previous screen.
- Click **Cancel** to exit the wizard.

Review

➢ This screen only displays if **Across all POINTs** was selected on the wizard's **Alarm Assignment** screen.

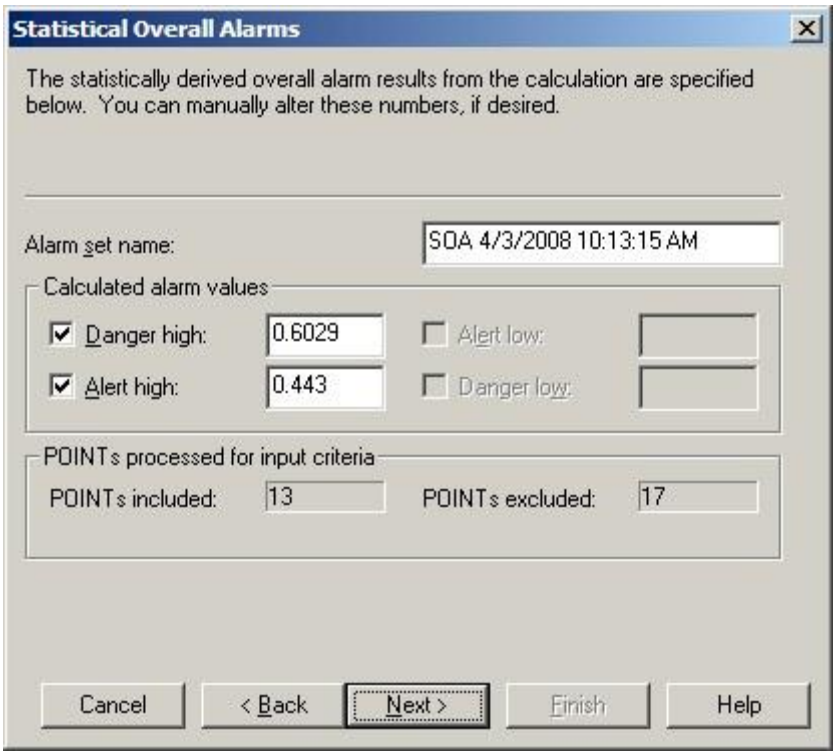


Figure 2 - 50.
The **Statistical Overall Alarms Wizard**'s Review Screen.

The statistically derived overall alarm results display on this screen. These numbers may be edited, if necessary.

Fields include:

Alarm set name – Specify a unique name for the alarm.

Calculated alarm values – Edit values as needed.

> ➢ **Calculated alarm values** fields are available based on overall alarm type selection.

POINTs processed for input criteria – Number of POINTs selected as candidates for processing.

POINTs included – Number of included POINTs.

POINTs excluded – Number of excluded POINTs.

> ➢ Alarms are still applied to the POINTs excluded from calculation functions.

- Click **Next** to continue.
- Click **Back** to return to the previous screen.
- Click **Cancel** to exit the wizard.

Finish

- Click the **Finish** button to assign the statistically derived overall alarm to all POINTs in the specified workspace.

Process progress displays on the screen.

- Click **Back** to return to the previous screen.
- Click **Cancel** to stop the operation without changing the POINTs.

Statistical MCD Alarms Wizard

Overview

For POINTs in a **Workspace** window, the **Statistical MCD Alarms Wizard** guides you through a process that automatically generates accurate MCD alarm settings to support three distinct alarm levels for each of the measurements collected for an MCD POINT, based upon historical measurement data.

> ➢ The **Statistical MCD Alarms Wizard** only operates on an active **Workspace** window.

Introduction

The **Introduction** screen is the first screen in the **Statistical MCD Alarms Wizard**. The measurement data used to generate the alarm values is generated from the POINTs included in the selected Workspace (identified in the **Workspace** field).

- Select a Workspace for MCD calculation from the **Workspace** drop-down list.
- Click the Save processing details to "Statistical MCD Alarms.log" checkbox to create and save a log file.
- Click **Next** to continue, or click **Cancel** to exit the wizard.

Measurement Selection

Select the method for selecting the measurement data to generate MCD alarm values.

Select **All measurements** to use all measurement data to generate the MCD alarm values (default).

Select **Measurements in this date range** and select **From** and **To** dates from the drop-down lists to use all measurements in the indicated date range to generate the MCD alarm values.

Select **Last fixed number of measurements** and enter number of measurements to use the specified number of measurements to generate MCD alarm values.

- Click **Next** to continue, click **Back** to return to the previous screen, or click **Cancel** to exit the wizard.

Alarm Assignment

Select the calculation method to use to determine alarm values.

Select **Individual POINTs** to use each POINT's readings to generate a unique set of alarm values for the POINT. The resulting values are assigned to each POINT as a *private* alarm.

> ➢ This operation generates and assigns a private alarm for **each** POINT.

Select **Across all POINTs** to use the readings for all the POINTs to generate one set of alarm values that is assigned to each POINT included in the calculation. The resulting values are saved as a *shared* alarm.

> ➢ If **Across all POINTs** is selected, a Review Page displays before alarms are applied, allowing verification and confirmation.

- Click **Next** to continue, click **Back** to return to the previous screen, or click **Cancel** to exit the wizard.

Generation Parameters

Enter standard deviation factors to be used in MCD alarm calculations.

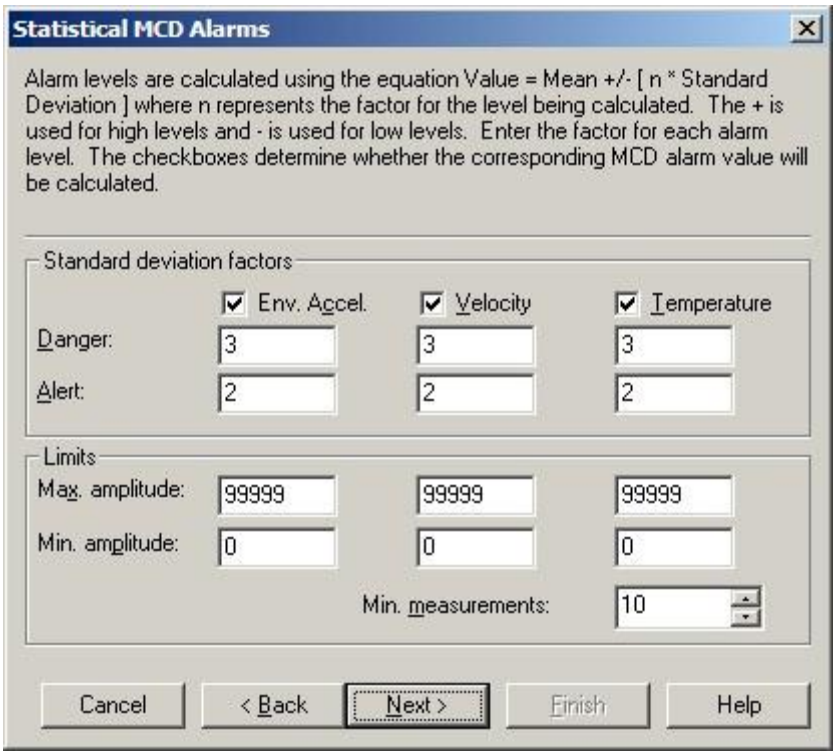


Figure 2 - 51.
The **Statistical MCD Alarms Wizard**'s Generation Parameters Screen.

- Enter the standard deviation and amplitude information for each measurement type to be used in the MCD alarm calculations.
    - Use the checkboxes to enable and disable measurement types (**Acceleration**, **Velocity**, and **Temperature**) as necessary.
- Enter the appropriate values in the following **Standard deviation factor** fields:

    Danger - Enter the value to be multiplied by the standard deviation to establish the danger level for each enabled measurement type.

    Alert - Enter the value to be multiplied by the standard deviation to establish the alert level for each enabled measurement type.

Limits fields include:

Max. amplitude - Enter the maximum amplitude of the MCD measurement value to include in calculation for each enabled measurement type.

Min. amplitude - Enter the minimum amplitude of the MCD measurement value to include in calculation for each enabled measurement type.

Min. measurements - Enter the minimum number of the POINT's measurements to be included in calculation.

- Only POINTs that have the number of indicated minimum measurements (or more) are included in the calculation.
- Min. Measurements field is not available if measurement selection is **Last fixed number of measurements**.

- Click **Next** to continue, click **Back** to return to the previous screen, or click **Cancel** to exit the wizard.

Process

Begin the Statistical MCD Alarm calculation by pressing the **Next** button from this page.

- Click **Next** to begin the MCD alarm calculations. Process progress displays along with the number of POINTs processed.
- Prior to beginning calculation, you may click **Back** to return to the previous screen.
- Click **Cancel** to exit the wizard at any time.

Review

➢ This screen only displays if **Across all POINTs** was selected on the wizard's **Alarm Assignment** screen.

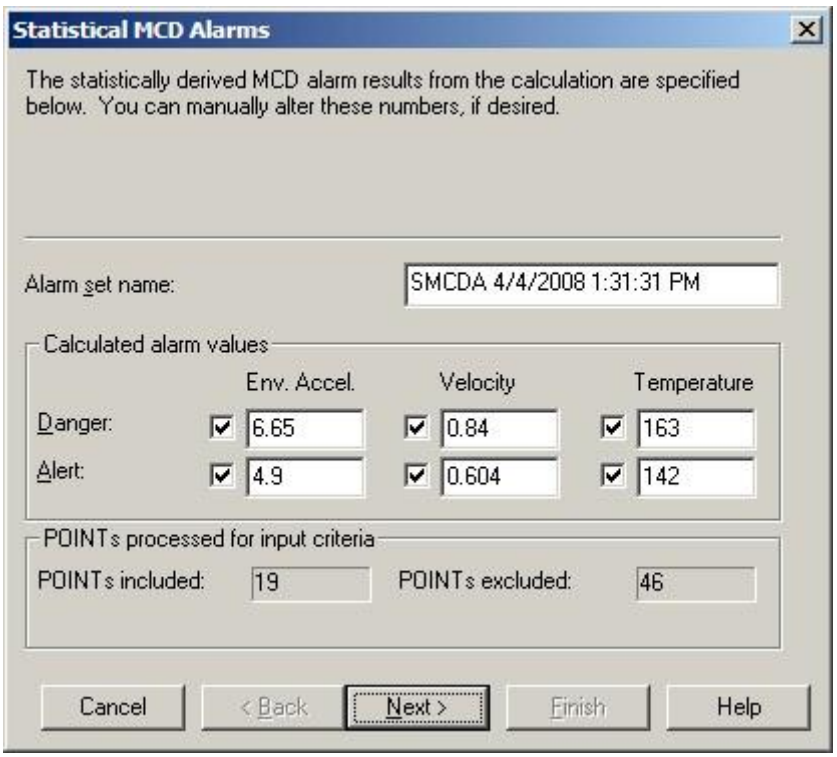


Figure 2 - 52.
The **Statistical MCD Alarms Wizard**'s Review Screen.

The statistically derived overall alarm results display on this screen. These numbers may be edited, if necessary.

Fields include:

Alarm set name – Enter a unique name for the alarm.

Calculated alarm values – Edit values for each MCD measurement type as needed.

POINTs processed for input criteria – Number of POINTs selected as candidates for processing.

POINTs included – Number of included POINTs.

POINTs excluded – Number of excluded POINTs.

- Alarms are still applied to the POINTs excluded from calculation functions.

- Click **Next** to continue, **Back** to return to the previous screen, or **Cancel** to exit the wizard.

Finish

- Click the **Finish** button to assign the statistically derived MCD alarm to all MCD POINTs in the specified workspace.

Process progress displays on the screen.

- Click **Back** to return to the previous screen.
- Click **Cancel** to stop the operation without changing the POINTs.

Templates

Templates save time, contribute to consistent organization, and allow you to make bulk entries. For example, you can quickly set the machine speed for all POINTs beneath a machine with a template. Templates allow you to define custom organizational structures for repeated use when building or defining your hierarchy.

- The same template may be used across many different hierarchies.

Managing Templates

To add a new template:

- Select the **Customize** menu's **Template** option. The **Template** dialog displays.

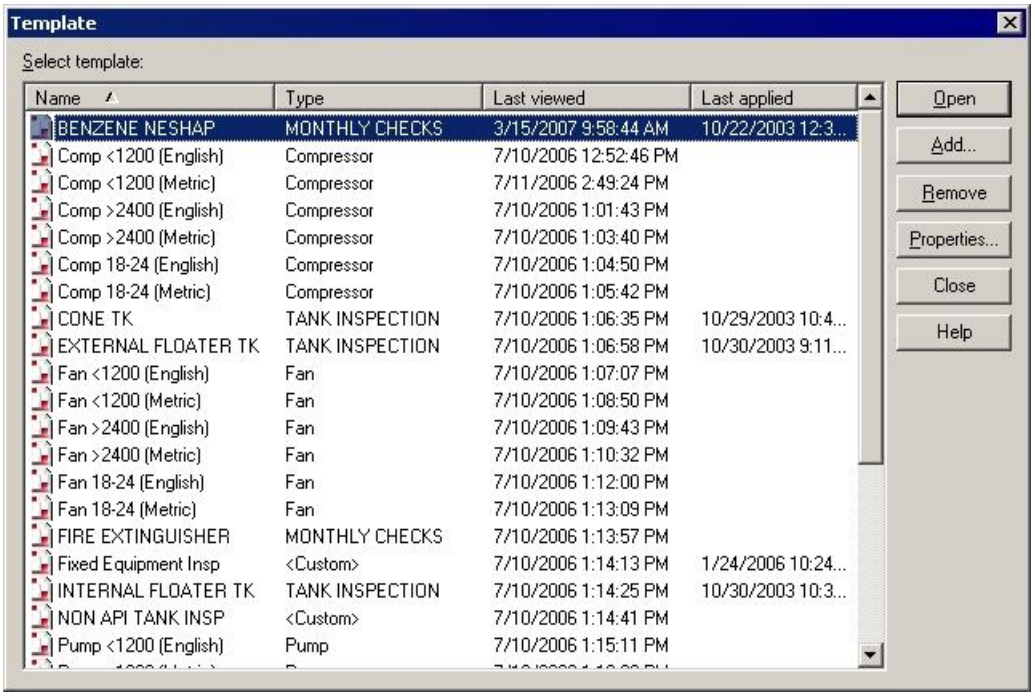


Figure 2 - 53.
The **Template** Dialog.

- Click the dialog's **Add** button. The **Template Properties** dialog displays.
- Enter the new template's **Name** and **Description.**
- Select the template's **Type** from the drop down list. Select a previously created template or <**Custom>**.
  - If you need a new template that is only slightly different from a previously created template, you can select a previous template as your **Type** and then edit only the necessary items.
- Click the dialog's **OK** button. The new template window displays.

In the template window, insert new Groups and POINTs to build the new template's hierarchy structure.

- Using the **Insert** menu, insert desired structure elements (groups and POINTs) in the desired configuration into the template window.

    - You may also use **Copy**, **Paste**, and **Paste Multiple** to build your template's structure.

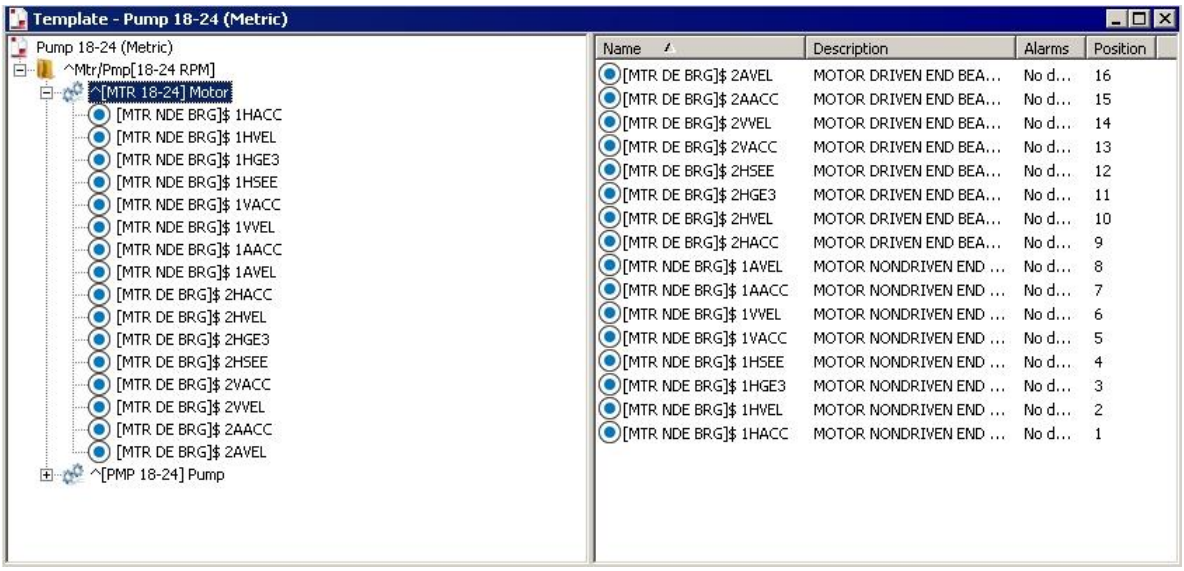


Figure 2 - 54.
Template Window With Custom Structure.

When building your template structure, you may also set up custom names using "special" characters in the name fields.

When applying a template, the template wizard assists with naming hierarchy items whose template name includes "special" characters

Custom Names

Templates hierarchy items may be inserted in your hierarchy :

- With the name specified in the template, or
- With the Template wizard prompting you to enter a name for items inserted in your hierarchy, or
- With custom names created by the Template wizard that are based upon your existing hierarchy.

The last two options are accomplished by special characters within your template hierarchy names.

- When a new item is inserted into the Template, its **Properties** dialog displays.

    - You may also access the **Properties** dialog by right-clicking to access the context menu, or using the **Properties** toolbar button.

You can configure the custom naming feature to prompt you to input a unique name for the specified item as the template is applied. You can also set up your template to automatically name structure items based on your entered parameters.

To set up name prompt:

- In the Properties dialog's **Name** field, enter a "^" as the first character. During the application of the template, the template wizard will prompt you to either accept the item's name as it appears after the "^", or enter a new name for the hierarchy item as the template is being processed.

Use of special characters enables automatic naming during template application. Based on your entries, the new items take their name from the portions of the parent item's name.

To set up automatic naming:

- In the **Properties** dialog's **Name** field, use a "$" to cause the inserted template item (child) to use a portion of the target hierarchy parent's name. Each "$" in the template item's name is replaced by a sequential word from the target hierarchy parent's name. Use as many "$"s as necessary. For example, if the parent item's name is "Dryer Section," you might apply a template item named "$ $ Felts." This will insert the template item (child) and name the it "Dryer Section Felts."
- Also, square brackets ("[ ]") may be used to strip items from the final name. This allows you to use "[ ]"s and "$"s together to use some portions of the parent's name while skipping others. For example, if the parent's name is "FD Fan", and you wish to remove the "FD" prefix, place "[ ]"s around the dollar sign representing the "FD" ([$]$). The inserted item will be named "Fan." You can also use "[ ]"s to include comments that are visible when viewing the template and as the template is applied. The comment text does not appear in the final name. To do so, enter your auto-naming characters followed by your comment text enclosed in brackets. For example, using the earlier "FD Fan" example, the entry "[$]$[left env] would result in the item being named "Fan." The comment text, "left env" is visible to you when you view the template, and as the template is applied, but is deleted from the item's name in the hierarchy list.

To open an existing template:

- In the **Template** window, select the template to open.
- Click the dialog's **Open** button. The selected template window displays.

To remove an existing template:

- In the **Template** window, select the template to remove.
- Click the dialog's **Remove** button. When prompted, confirm action.

The selected template is removed.

To add a Template Type:

- In the **Template** dialog, click **Add**, or select an existing template and click **Edit.** The **Template Properties** dialog displays.
- In the **General** tab's **Type** field, place your cursor in the drop down list and enter the new type name.
- Click **OK** to save the new template type and apply it to the current template.

Applying Templates

To apply a template:

- In your target **Hierarchy**, select the item under which you wish the template items to branch.
- Select the **Insert** menu's **Apply Template** option. The **Apply Template** dialog displays.

The **Apply Template** dialog lists all available templates.

- Select desired template and click **Apply** to launch the **Apply Template Wizard**.

Introduction Screen

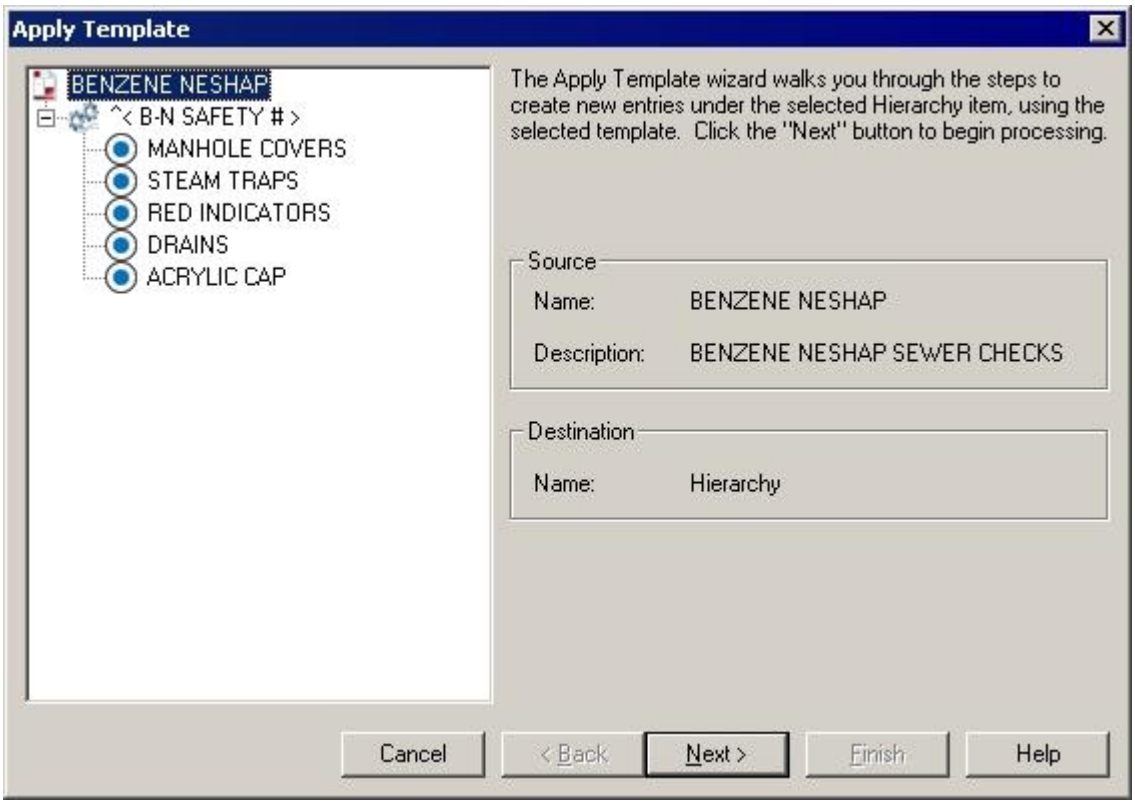


Figure 2 - 55.
The **Apply Template Wizard** Dialog.

The **Apply Template Wizard** guides you through the required steps to create new entries under the selected hierarchy item, using the selected template.

The introduction screen displays the following information about the selected template:

Name – Displays the name of the template being applied.
Description – Displays the description provided for the template.
Destination – Displays the location in the hierarchy to which the template will be applied.

Before continuing, ensure the template name is correct, and ensure the destination is accurate.

- Click **Next** to continue.

Configuration Screen

The template application process begins on the **Configuration** screen. This screen walks through the template, gathering information as needed:

Name - If necessary, you will be prompted to specify the name of the item being processed.

Running speed - Specify the machine speeds for the highlighted machine. This speed will be used to set the speed of each POINT beneath the machine.

- The processing stops to allow you to enter necessary information.

Custom Naming

- You will be prompted to enter a name if you set your template up using the special name-prompt character "^." Your structure elements will be automatically named if you set up your template using auto-name characters.

- Click **Next** to continue.

When the template processing is complete, click **Next** to continue to the build screen.

- View the template's progress in the dialog's progress bar.
- Click **Back** to return to the wizard's last stopping point.

Build Screen

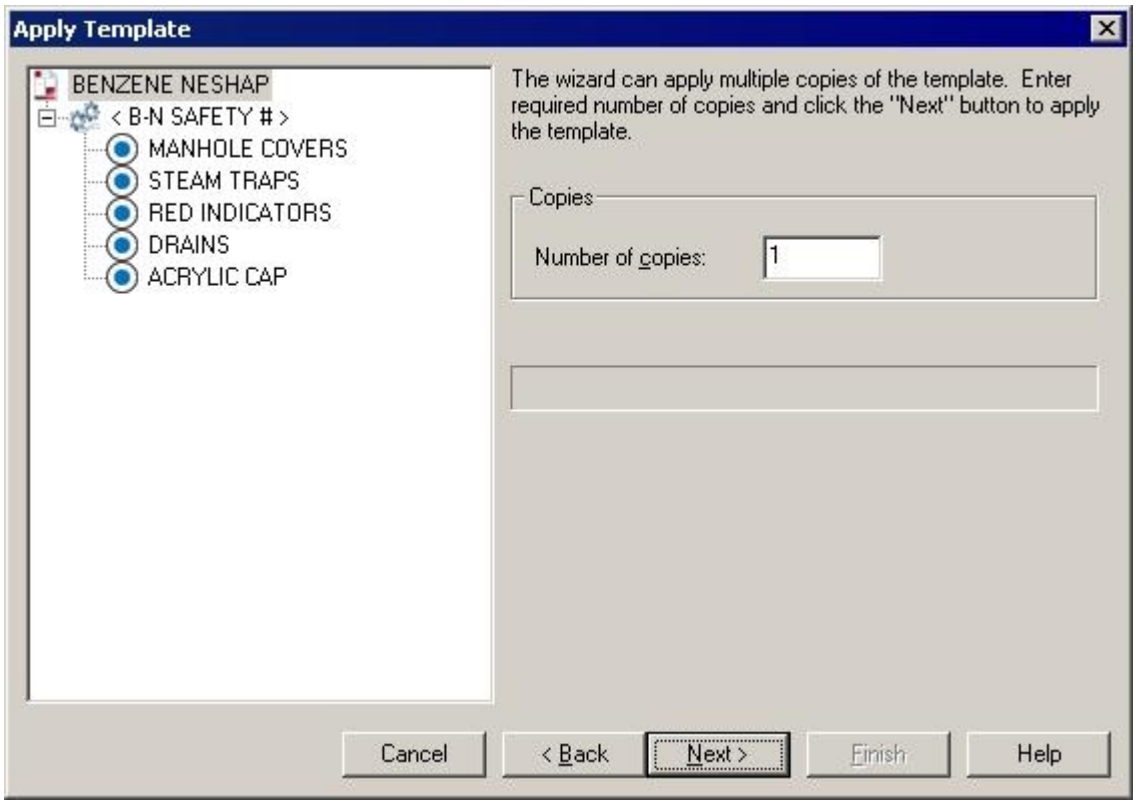


Figure 2 - 56.
The **Apply Template Wizard** Dialog.

This screen uses the template to build the template hierarchy items within the specified target hierarchy item.

- The wizard is capable of generating multiple copies of the template.

- Specify the number of copies required.
- Click **Next** to build the hierarchy.
- Click **Finish** to close the wizard.

Working with Filters

Filters allow you to setup and apply filter criteria that determine which POINTs display in a new filtered **Workspace** window. Filtered workspaces group together POINTs and Groups (based on your filter input) in one window for easy comparison and analysis.

Managing Filters

Use the **Customize** menu's **Filters** option to manage (add, copy, edit, and remove) filters. This allows you to define reusable filters.

To add a new filter:

- Select the **Customize** menu's **Filters** option. The **Filters** dialog displays.
- Click the **Add** button. The **Filter Editor** dialog displays.

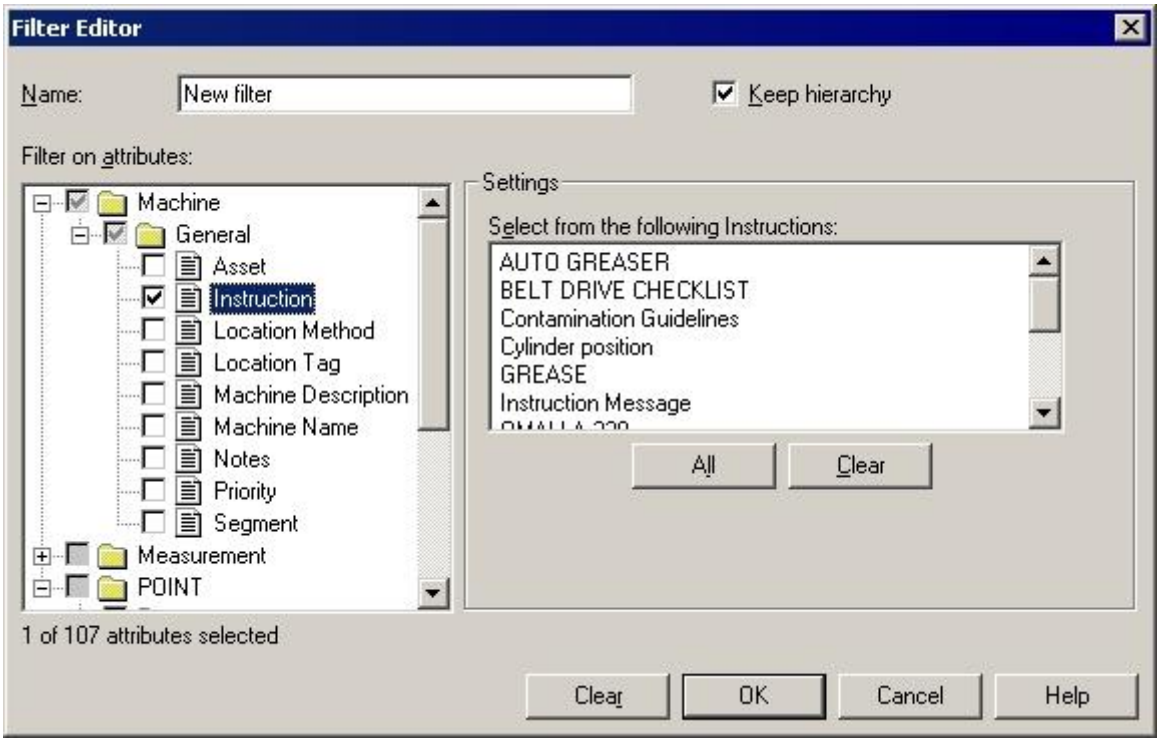


Figure 2 - 57.
The **Filter Editor** Dialog.

Name - Specify the new filter's name.

- ➢ It is helpful to give the filter a name based on its criteria for easy recognition. For example, if you need to sort Groups based on their priority setting, you may want to create and name a filter specifically for **Priority**.

Keep hierarchy – Click the checkbox to determine whether the hierarchy Groups appear with their filtered POINTs in the filtered workspace, or whether only the filtered POINTs appear in the filtered workspace. If disabled, filtered POINTs appear beneath the filtered machine without the original hierarchical format. The filtered workspace lists all filtered POINTs under a "Filtered Machine" hierarchy item.

Filter on attributes – Define which attributes to filter on. Attributes are categorized by machine, measurement, POINT, data type, and/or attribute type. Select an attribute group to modify its individual settings.

Settings – Displays current individual attribute settings for the specified attribute category. Use the edit fields to view and/or edit attributes as necessary.

- ➢ When one or more attribute within an attribute category is included in the current filter, a checkmark displays next to the attribute category folder.

- Use the **All** and **Clear** buttons to quickly include all or none of the displayed attributes (rather than selecting / de-selecting one by one) for the selected attribute category in your current filter.

Include – Specify whether to filter for POINTs that match *every* attribute setting, or filter for POINTs that match at least *one* attribute setting.

Any Selected – Select to filter for POINTs matching **any** individual attribute of the total included in the filter. Only these POINTs display in the Filtered Workspace

All Selected - Select to filter for POINTs matching **all** attributes included in the filter. Only these POINTs display in the Filtered Workspace.

- The number of attributes selected and the total number of available attributes displays in the dialog's lower left corner.

- Click the **OK** button to create a new workspace based on the defined criteria of the current filter. A progress bar displays, indicating filter process status.
- Click **Cancel** to close dialog without performing filter and without saving filter entries.

To create a new filter based on a copy of an existing filter:

If you need a new filter that is only slightly different from a previously created filter, you can select the previous filter and then edit only the necessary items.

- In the **Filters** dialog, select the existing filter you wish to copy and use as a template.
- Click the dialog's **Copy** button. The **Filters Editor** dialog displays.
- Enter the new filter's name.

- By default, the new filter is given the same name as the copied filter on which it is based, with a numerical suffix.

Filter on attributes - Select additional individual attributes, or edit the existing attributes. When an existing filter is selected, its existing selected attributes display.

- Click **OK** to apply the new filter.

To edit an existing filter:

- In the **Filters** dialog, select the existing filter you wish to edit.
- Click the dialog's **Edit** button. The **Filters Editor** dialog displays.

Filter on attributes – Displays the selected existing filter's selected attributes.

- Perform your edits and click the dialog's **OK** button to save the edited filter.

To remove an existing filter.

- In the **Filters** dialog, select the existing filter you wish to remove.
- Click the dialog's **Remove** button. Confirm removal when prompted. The filter is removed.

Applying Filters

You can create and apply private and shared filters using the **Insert** menu's **Apply Filters** dialog. When a filter is applied, the resulting items display in a new Workspace window.

To apply a filter:

- Select the **Insert** menu's **Apply Filter** option. The **Apply Filter** dialog displays.

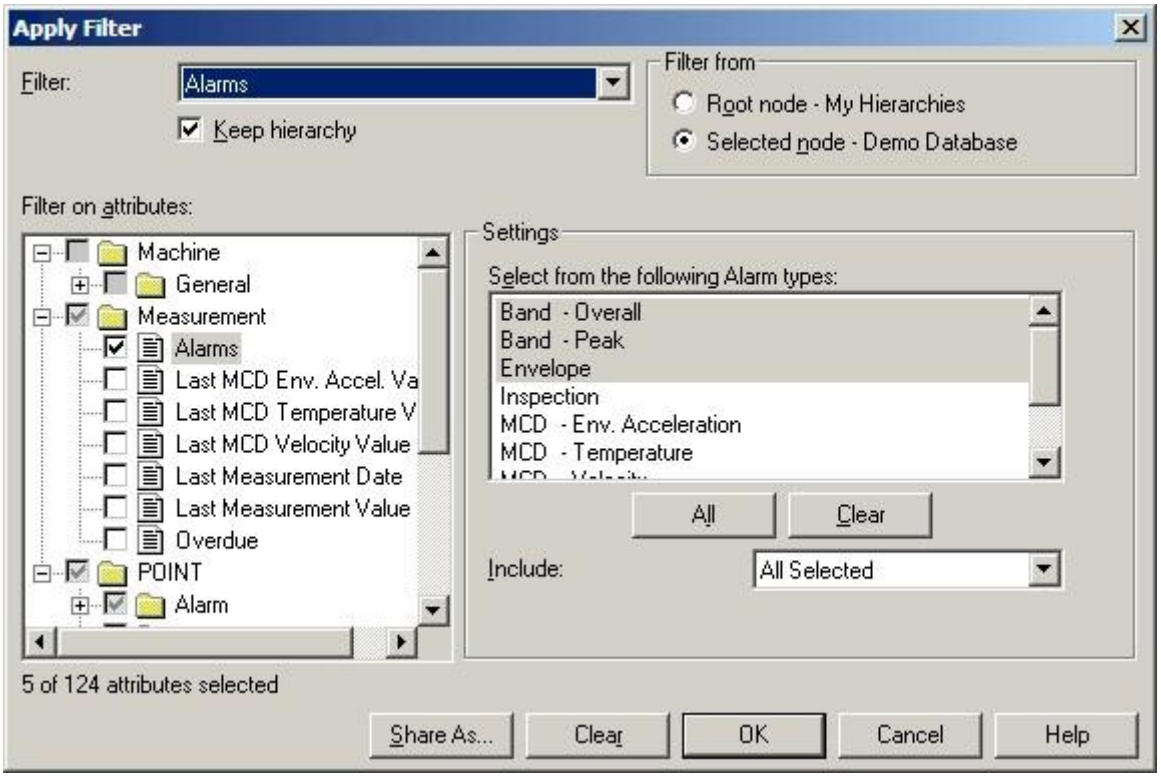


Figure 2 - 58.
The **Apply Filter** Dialog.

Filter – Select an existing filter or <**Private Filter**>. This determines what to base your filter on (either a copy of an existing shared filter or to create a new private filter).

Filter on attributes – Displays the selected existing filter's selected attributes.

Keep hierarchy - Click the checkbox to determine whether the hierarchy Groups appear with their filtered POINTs in the filtered workspace, or whether only the filtered POINTs appear in the filtered workspace. If disabled, filtered POINTs appear beneath the filtered machine without the original hierarchical format. The filtered workspace lists all filtered POINTs under a "Filtered Machine" hierarchy item.

- In the dialog's **Filter from** area, select **Root node – My Hierarchies** to search all open hierarchies for matching POINTs. Select **Selected node** to search from your selected node and below *only*.
- In the dialog's **Filter on attributes** area, define which attributes to filter on. Attributes specific to machine, measurement, POINT, data type, and/or attribute type are grouped together. Select an attribute type to include in the filter.

- Attribute settings for the selected attribute group display in the dialog's **Settings** area. View and/or edit attributes as necessary in the displayed input fields.
    - Individual attributes are described in detail in the next section.
    - When one or more attribute within an attribute group is included in the current filter, a checkmark displays next to the attribute group folder.

Include – Specify whether to filter for POINTs that match *every* attribute setting, or filter for POINTs that match at least *one* attribute setting.

Any Selected – Select to filter for POINTs matching **any** individual attribute of the total included in the filter. Only these POINTs display in the Filtered Workspace

All Selected - Select to filter for POINTs matching **all** attributes included in the filter. Only these POINTs display in the Filtered Workspace.

- The number of attributes selected and the total number of available attributes displays in the dialog's lower left corner.

- Click the dialog's **OK** button to apply the filter as a private filter
    - When a filter is applied, the resulting items display in a new Workspace window.

To make the filter a shared filter:

- Click **Share As** to assign the current filter a unique name and make it available as a shared filter. The **Enter Filter Name** dialog displays.
- Enter a unique filter name and click **OK**.
- Click the **Apply Filter** dialog's **OK** button to create a workspace based on the defined criteria of the current filter. A progress bar displays, indicating filter process status.
- Click **Cancel** to close dialog without performing filter and without saving filter entries.

Individual Filter Attributes

All individual filter attributes are described below.

Asset

This attribute is located under **General / Machine**.

Filters for all POINTs under the selected machine with the indicated asset (the physical machinery occupying the segment).

Edit – Enter the asset in the text field.

- Standard wildcard operations are supported.

Location Method - Machine

This attribute is located under **General / Machine**.

Filters for all Machines configured with the selected **Location Method**.

Edit - Select the desired location method for the filter. Options are **Barcode**, **MCQ ID**, or **None**.

Location Tag - Machine

This attribute is located under **General / Machine**.

Filters for all Machine configured with the entered **Location Tag**.

Edit - Enter the location tag for the filter in the text edit field.

Machine Description

This attribute is located under **General / Machine**.

Filters for all POINTs under the selected machine with the indicated description.

Edit – Enter the machine description in text field.

- Standard wildcard operations are supported.

Machine Name

This attribute is located under **General / Machine**.

Filters for all POINTs under the selected machine with the indicated name.

Edit – Enter the machine name in the text field.

- Standard wildcard operations are supported.

Priority

This attribute is located under **General / Machine**.

Filters for all POINTs under the selected machine with the indicated priority assignment.

- **Edit –** Select one or more priority assignment(s).

Segment

This attribute is located under **General / Machine**.

Filters for all POINTs under the selected machine with the indicated segment (physical location of a Group).

Edit – Enter the segment in the text field.

- Standard wildcard operations are supported.

Alarms

This attribute is located under **Measurement**.

Filters for all POINTs with a last measurement in the indicated alarm.

Edit – Select one or more alarms from the settings list. Use the **All** button to select all alarms in the settings list. Use the **Clear** button to clear all selections from the alarms in the settings list. Select **Include All Selected** to include POINTs matching *all* alarm selections. Select **Include Any Selected** to include POINTs matching *at least one* alarm selection.

Last MCD Env. Accel. Value

This attribute is located under **Measurement**.

Filters for all MCD Enveloped Acceleration POINTs with measurement values within a range between the entered **Minimum** and **Maximum** values.

Last MCD Temperature Value

This attribute is located under **Measurement**.

Filters for all MCD Temperature POINTs with measurement values within a range between the entered **Minimum** and **Maximum** values.

Last MCD Velocity Value

This attribute is located under **Measurement**.

Filters for all MCD Velocity POINTs with measurement values within a range between the entered **Minimum** and **Maximum** values.

Last Measurement Date

This attribute is located under **Measurement**.

Filters for all POINTs with a last measurement taken between (and including) the specified dates.

Edit – Enter the dates using standard date selection operation.

Last Measurement Value

This attribute is located under **Measurement**.

Filters for all POINTs with an overall value (Channel 1) between and including specified values.

Edit – Enter values in the edit fields.

Overdue

This attribute is located under **Measurement**.

Filters for all POINTs' schedule condition (**Overdue** or **Not Overdue**).

Edit – Select **Overdue** or **Not Overdue**.

Number of Days – Enter the number of days (from now). Filters for POINTs matching the selected status (**Overdue** or **Not Overdue**) within the entered date range.

Inspection Alarms

This attribute is located under **POINT / Alarm**.

Filters for all POINTs with the selected shared inspection alarm.

Edit – Select one or more shared inspection alarm from the settings list. Use the **All** button to select all shared inspection alarms in the settings list. Use the **Clear** button to clear all selections from the shared inspection alarms in the settings list.

MCD Alarms

This attribute is located under **POINT / Alarm**.

Filters for all POINTs with the selected shared MCD alarm.

Edit – Select one or more shared MCD alarm from the settings list. Use the **All** button to select all shared MCD alarms in the settings list. Use the **Clear** button to clear all selections from the shared MCD alarms in the settings list.

Overall Alarm

This attribute is located under **POINT / Alarm**.

Filters for all POINTs with the selected shared overall alarm.

Edit – Select one or more shared overall alarm from the settings list. Use the **All** button to select all shared overall alarms in the settings list. Use the **Clear** button to clear all selections from the shared overall alarms in the settings list.

Application Type

This attribute is located under **POINT / General**.

Filters for all POINTs configured to collect the indicated application data.

Edit – Select one or more application type from the settings list. Use the **All** button to select all application types in the settings list. Use the **Clear** button to clear all selections from the application types in the settings list.

DAD Type

This attribute is located under **POINT / General.**

Filters for all POINTs with the indicated DAD type.

Edit - Select one or more DAD type from the settings list. Use the **All** button to select all DAD types in the settings list. Use the **Clear** button to clear all selections from the DAD types in the settings list.

Enable / Disable

This attribute is located under **POINT / General**.

Filters for all POINTs enabled or disabled for download.

Edit – Select **Enable** or **Disable**.

Filter Keys

This attribute is located under **POINT / General.**

Filters for all POINTs with the indicated filter key(s).

Edit - Select one or more filter key from the settings list. Use the **All** button to select all filter keys in the settings list. Use the **Clear** button to clear all selections from the filter keys in the settings list. Select **Include All Selected** to include POINTs matching *all* filter key selections. Select **Include Any Selected** to include POINTs matching *at least one* filter key selection.

POINT Description

This attribute is located under **POINT / General.**

Filters for all POINTs with the indicated description.

Edit – Enter POINT description in **POINT Description** field.

POINT Name

This attribute is located under **POINT / General.**

Filters for all POINTs with the indicated name.

Edit – Enter POINT name in **POINT Name** field.

- Wildcard characters are available for use.

Sensor Type

This attribute is located under **POINT / General.**

Filters for all POINTs with the indicated sensor type.

Edit - Select one or more sensor type from the settings list.

Evaluation Time

This attribute is located under **POINT / Derived**.

Filters for all derived POINTs with the indicated evaluation time.

Edit – Enter the evaluation **Units**, and **Minimum** and **Maximum** values in the appropriate fields.

Expression

This attribute is located under **POINTs / Derived**.

Filters for all POINTs with the selected shared expression.

Edit – Select one or more expressions from the settings list. Use the **All** button to select all expressions in the settings list. Use the **Clear** button to clear all selections from the settings list.

Compliance

This attribute is located under **POINT / Schedule.**

Filters for all POINTs with the indicated compliance schedule setting (as configured in **POINT Properties / Compliance**).

Edit – Select units from the drop down list. Enter minimum and maximum number of selected units.

- Units are automatically evaluated for compatibility. For example, an entry of 24 hours will include a POINT with a DAD schedule set to 1 day.

Keep Current Data

This attribute is located under **POINT / Schedule**.

Filters for all POINTs matching the indicated **Keep Current Data** units (as configured in **POINT Properties / Schedule**).

Edit - Select units from the drop down list. Enter minimum and maximum number of selected units.

Keep Unscheduled Data

This attribute is located under **POINT / Schedule.**

Filters for all POINTs matching indicated **Keep Unscheduled Data** units (as configured in **POINT Properties / Schedule**).

Edit – Select units from the drop down list. Enter minimum and maximum number of selected units.

Long Term Archive Keep Data

This attribute is located under **POINT / Schedule.**

Filters for all POINTs matching the indicated **Long Term Archive Keep Data** units (as configured in **POINT Properties / Schedule**).

Edit – Select units from the drop down list. Enter minimum and maximum number of selected units.

Long Term Archive Take Data

This attribute is located under **POINT / Schedule.**

Filters for all POINTs matching the indicated **Long Term Archive Take Data** units (as configured in **POINT Properties / Schedule**).

Edit – Select units from the drop down list. Enter minimum and maximum number of selected units.

Short Term Archive Keep Data

This attribute is located under **POINT / Schedule.**

Filters for all POINTs matching the indicated **Short Term Archive Keep Data** units (as configured in **POINT Properties / Schedule**).

Edit – Select units from the drop down list. Enter minimum and maximum number of selected units.

Short Term Archive Take Data

This attribute is located under **POINT / Schedule.**

Filters for all POINTs matching the indicated **Short Term Archive Take Data** units (as configured in **POINT Properties / Schedule**).

Edit – Select units from the drop down list. Enter minimum and maximum number of selected units.

Unscheduled

This attribute is located under **POINT** / **Schedule**.

Filters for all POINTs without a configured compliance schedule.

Conditional POINT

This attribute is located under **POINT / Setup.**

Filters for all POINTs with a common conditional POINT.

Edit - Select conditional POINT(s) from settings list. Use the **Clear** button to clear all selections from the settings list.

Full Scale, Full Scale gE, Full Scale Temperature, Full Scale Velocity

This attribute is located under **POINT / Setup.**

Filters for all POINTs whose Full Scale setting falls within the indicated full scale value range.

Edit – Select unit types from the settings list. Use the **All** button to select all unit types in the settings list. Use the **Clear** button to clear all selections from the settings list.

Full Scale Units

This attribute is located under **POINT / Setup.**

Filters for all POINTs matching the indicated **Full Scale Units** type

Edit – Select full scale unit types from the settings list. Use the **All** button to select all full scale unit types in the settings list. Use the **Clear** button to clear all selections from the full scale units settings list.

Location

This attribute is located under **POINT / Setup.**

Filters for all POINTs with the indicated location setting.

Edit – Select location(s) from the settings list. Use the **All** button to select all locations in the settings list. Use the **Clear** button to clear all selections from the settings list.

Form Type

This attribute is located under **POINT / Setup**.

Filters for all POINTs configured with the selected **Form Type**.

Edit - Select the desired form type for the filter. Options are **Keypad**, **Bar**, **Slider**, or **Gauge**.

Location Method - POINT

This attribute is located under **POINT / Setup**.

Filters for all POINTs configured with the selected **Location Method**.

Edit - Select the desired location method for the filter. Options are **Barcode**, **MCQ ID**, or **None**.

Location Tag - POINT

This attribute is located under **POINT / Setup**.

Filters for all POINTs configured with the entered **Location Tag**.

Edit - Enter the location tag for the filter in the text edit field.

Minimum Scale

This attribute is located under **POINT / Setup**.

Filters for all POINTs whose Minimum Scale value falls between the specified range.

Edit - Enter the minimum and maximum values for the filter range in the text edit fields.

Orientation

This attribute is located under **POINT / Setup.**

Filters for all POINTs with the indicated orientation.

Edit – Select orientation(s) from the settings list. Use the **All** button to select all orientations in the settings list. Use the **Clear** button to clear all selections from the settings list.

Save Data

This attribute is located under **POINT / Setup.**

Filters for all POINTs with the indicated save data setting.

Edit - Select save data setting from the settings list. Use the **All** button to select all save data settings in the settings list. Use the **Clear** button to clear all selections from the settings list.

Clear Alarm Non Collection

This attribute is located under **POINT / General.**

Filters for all POINTs with **Clear Alarms for Non-collection last measurements** enabled or disabled.

Edit – Select Enable or Disable.

Exclude Non-Collection From Report

This attribute is located under **POINT / General.**

Filters for all POINTs with **Exclude from reports if last measurement is a Non-collection event** enabled or disabled.

Edit – Select Enable or Disable.

Customize / Derived POINTs

The **Derived POINTs** dialog allows you to customize shared expressions, create new expressions, and to edit variables, constants, and the expression formula.

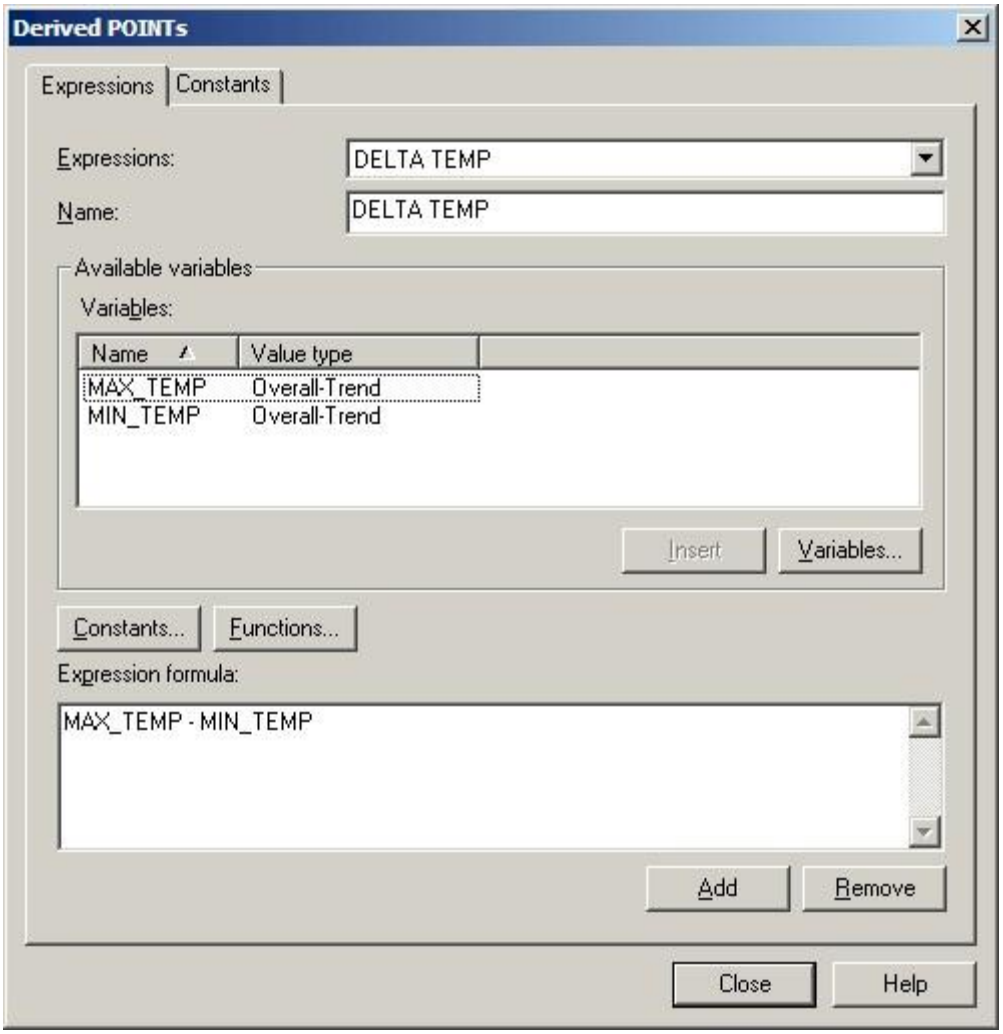


Figure 2 - 59.
The **Customize** menu's **Derived POINTs Expressions** tab**.**

To customize a shared expression:

- Select the expression you wish to edit from the **Expressions** drop down list.

Important - Any changes made to a shared expression affect all other POINTs sharing that expression, and overwrites the currently selected expression.

- You may rename the shared expression in the **Name** entry box.
- Click the **Variables** button to edit, add, or remove variables.
    - You cannot assign POINTs to the variables from the **Customize / Derived POINTs** dialog. Refer to the **POINT Properties / Expressions tab** section earlier in this chapter for details on assigning POINTs to variables.

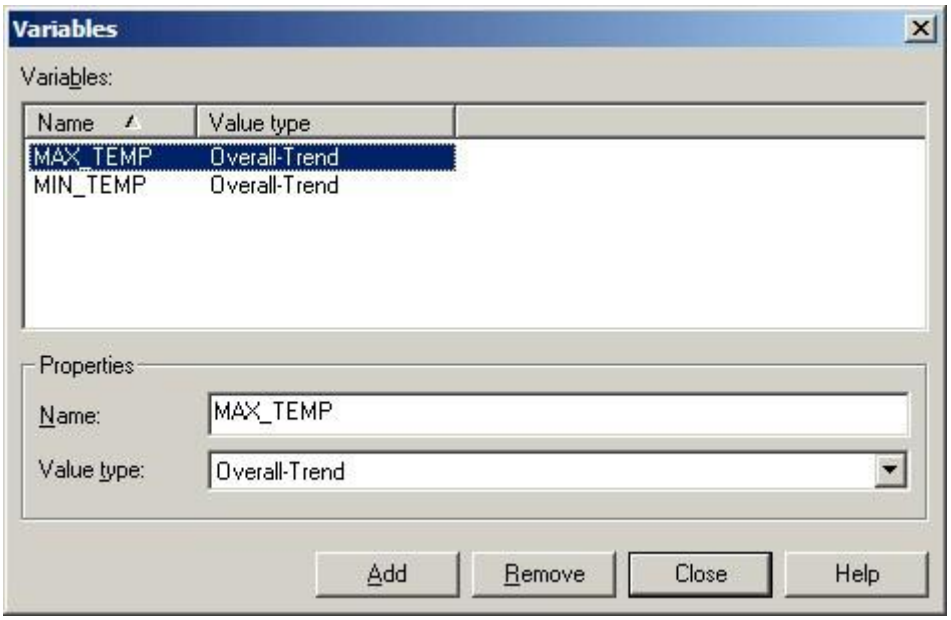


Figure 2 - 60.
The **Variables** Dialog.

- Edit the expression formula by inserting variables, constants, or formulas.
    - To add a new expression, click the **Add** button, and enter settings as previously described in this chapter's **POINT Properties** / **Expression Tab** section.

To edit constants:

There are two ways to edit shared constants. You can edit constants using the **Expressions** tab's **Constants** button, or by using the **Constants** tab. Both methods are described below.

- From the **Expressions** tab, click the **Constants** button to add a new constant to the **Constants** list. In the **Constants** dialog, click the **Add** button.

Or

- Click the **Constants** tab to add or remove a constant, or to edit pre-existing constants.
- Click the **Add** button to create a new constant, or select a constant from the **Constants** list and edit the **Name** and **Value** in the **Constant properties** area.

- Click the **Remove** button to remove the selected constant from the **Constants** list.

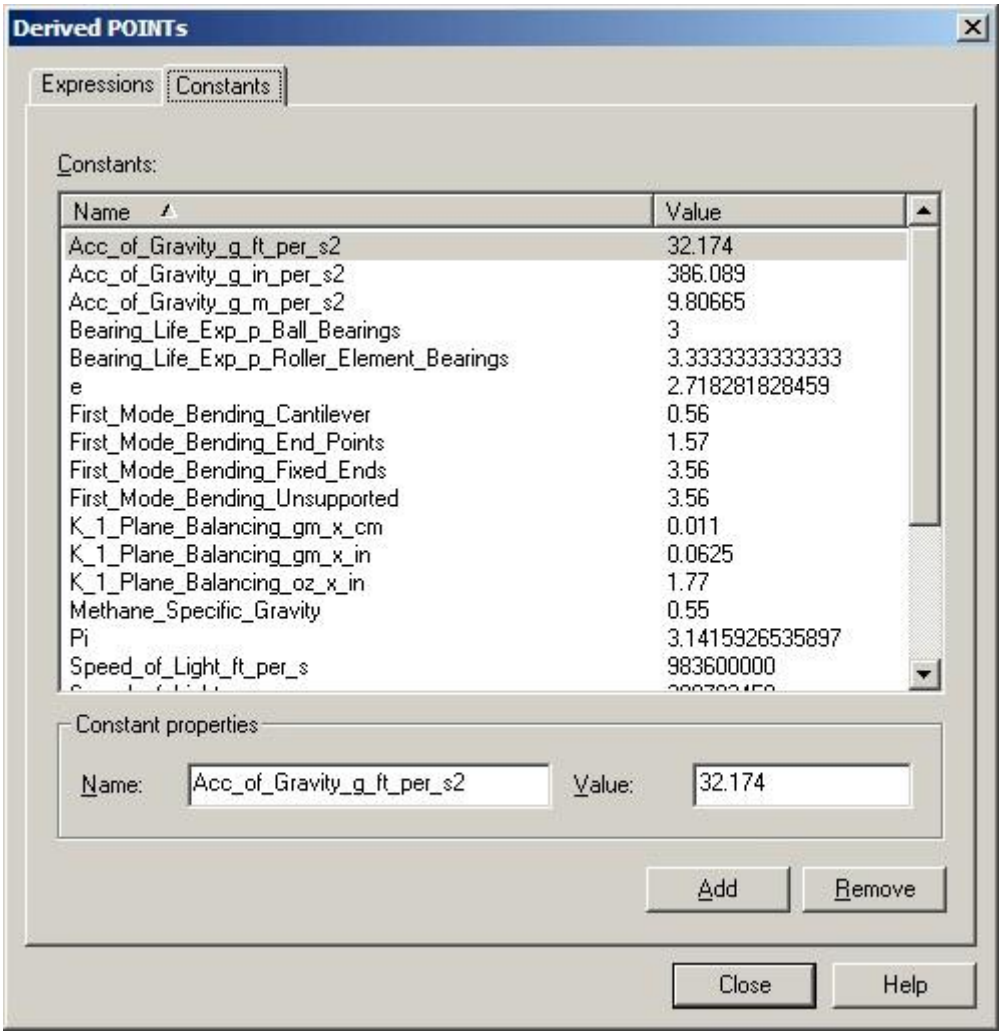


Figure 2 - 61.
The **Customize** menu's **Derived POINTs Constants** tab.

Important – After editing a derived POINT, you must manually calculate the derived POINT to update the POINT's existing data records. Reference the Calculating Derived POINTs section earlier in this chapter for details.

3
Data Collection ROUTEs and Other Data Transfer Operations

Overview

After establishing your database's POINTs, you are ready to create your collection ROUTEs.

- It is not imperative that you create @ptitude Inspector ROUTEs to download POINTs to the data acquisition device. Downloading directly from a plant hierarchy list is discussed later in this chapter.

A ROUTE is a measurement POINT collection sequence. ROUTEs are downloaded to a DAD to provide orderly collection of measurement data on a timely basis.

ROUTEs are first created on paper. You simply walk through your facility and list (in a logical, efficient collection sequence) the equipment and pre-defined POINTs you plan to collect at a given time. For example, list the measurements you plan to perform weekly (e.g., every Tuesday) as "Tuesday's ROUTE", and/or list the measurements you plan to perform monthly as the "monthly ROUTE."

Take time to organize your collection ROUTE paper copy thoroughly. A complete and organized paper copy collection ROUTE makes building @ptitude Inspector ROUTEs much easier.

After establishing your paper copy ROUTE(s), your next task is to use your paper copy ROUTE to create a @ptitude Inspector ROUTE.

How To Build ROUTEs

@ptitude Inspector's method for creating ROUTEs is simple.

Using your paper copy ROUTE, open the Hierarchy, ROUTE, or Workspace window for those measurement POINTs you wish to have in the ROUTE, and copy selected items (machines with their POINTs, SETs with their machines and POINTs, Custom Groups with their machines and POINTs, or the entire hierarchy) from the open **Hierarchy** window to the new **ROUTE** window, creating the new ROUTE's hierarchy list.

You may also insert (**Insert** menu) Groups directly into a ROUTE window, then select POINTs from a **Hierarchy**, **ROUTE**, or **Workspace** window, and copy them to your new **ROUTE**, organized beneath your newly inserted Groups.

If necessary, move hierarchy items in the **ROUTE** window to match the most efficient collection sequence (detailed on your paper copy ROUTE).

You can also configure your ROUTE to keep ROUTE statistics by designating it as a Structured ROUTE. Statistical ROUTE information can provide valuable information to assist in managing your ROUTEs.

- **IMPORTANT** - When moving hierarchy items to create the most efficient collection sequence, note that *in a ROUTE list, parental hierarchy items always remain attached to their measurement POINTs.*
- **IMPORTANT** - In a ROUTE window, changes to a POINT's placement in the list, and POINT deletions do not affect the Hierarchy window (database). *However, changes to individual POINT setup settings (POINT Properties)* ***do apply*** *to the database and reflect in Hierarchy window.*

  Changes to Group item Properties *do not* affect the database / Hierarchy window.

To open an existing ROUTE:

- Select the **View** menu's **ROUTE** command. The **ROUTE** dialog displays.
- Select an existing ROUTE and click the **Open** button. The selected ROUTE window opens.

To add a new ROUTE:

- Click the **ROUTE** dialog's **Add** button. The **ROUTE Properties** dialog displays.

ROUTE Properties / General

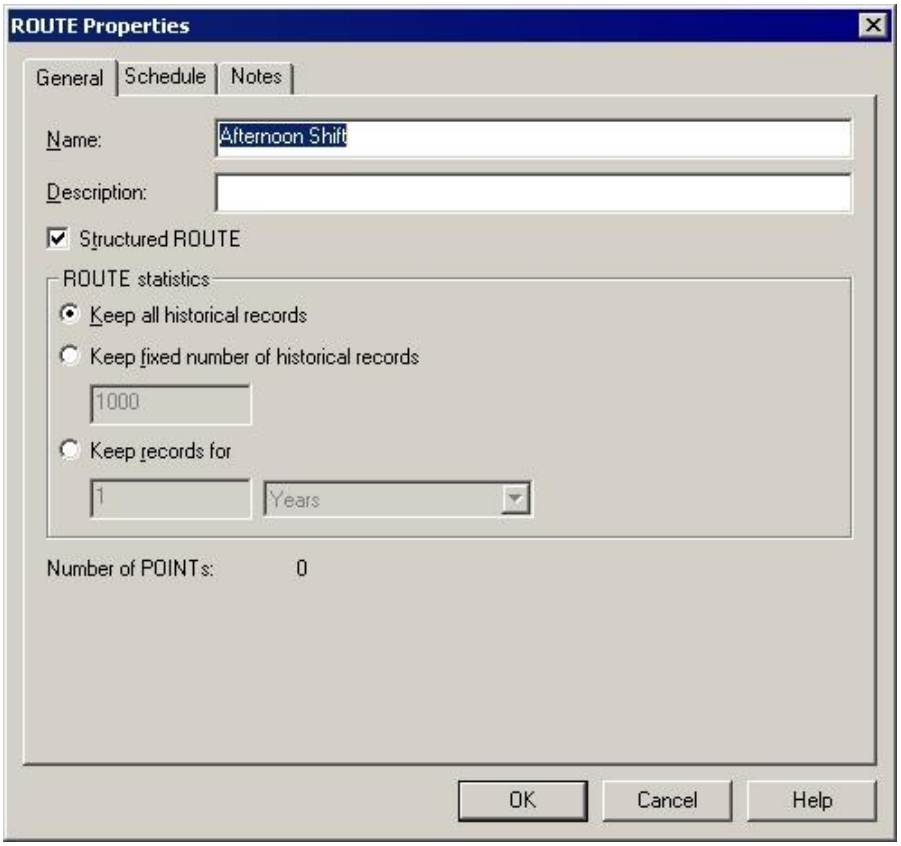


Figure 3 - 1.
The **ROUTE Properties / General** Dialog.

ROUTE Properties / General fields include:

Name – Enter a new ROUTE name.

Description – Enter a new description.

The **ROUTE Statistics** area allows you to make your ROUTE a structured ROUTE, and determine the type of historical information to keep. If historical record settings are entered, then ROUTE statistics, such as collection time duration, start and stop times, and operator ID, are recorded with the ROUTE. If the ROUTE is designated as a structured ROUTE, then data must be collected in the order in which the POINTs are listed in the ROUTE.

To create a structured ROUTE:

- Click the **Structured ROUTE** checkbox to designate the selected ROUTE as a structured ROUTE.

To enter ROUTE statistic settings:

- Click an option button to specify the amount of historical records to keep. Included in each historical record are the ROUTE's collection time duration, start and stop times, and Operator ID. Options include:

  Keep all historical records – Saves all historical ROUTE collection statistics for the selected ROUTE.

  Keep fixed number of historical records – Enter the number of historical records to save for the selected ROUTE.

  Keep records for – Enter a time duration value for storing historical records. For example, enter **6** in the text box and select **weeks** from the drop down list to save historical records for 6 weeks.

The number of POINTs included in the selected ROUTE display at the bottom of the dialog.

ROUTE Properties / Schedule

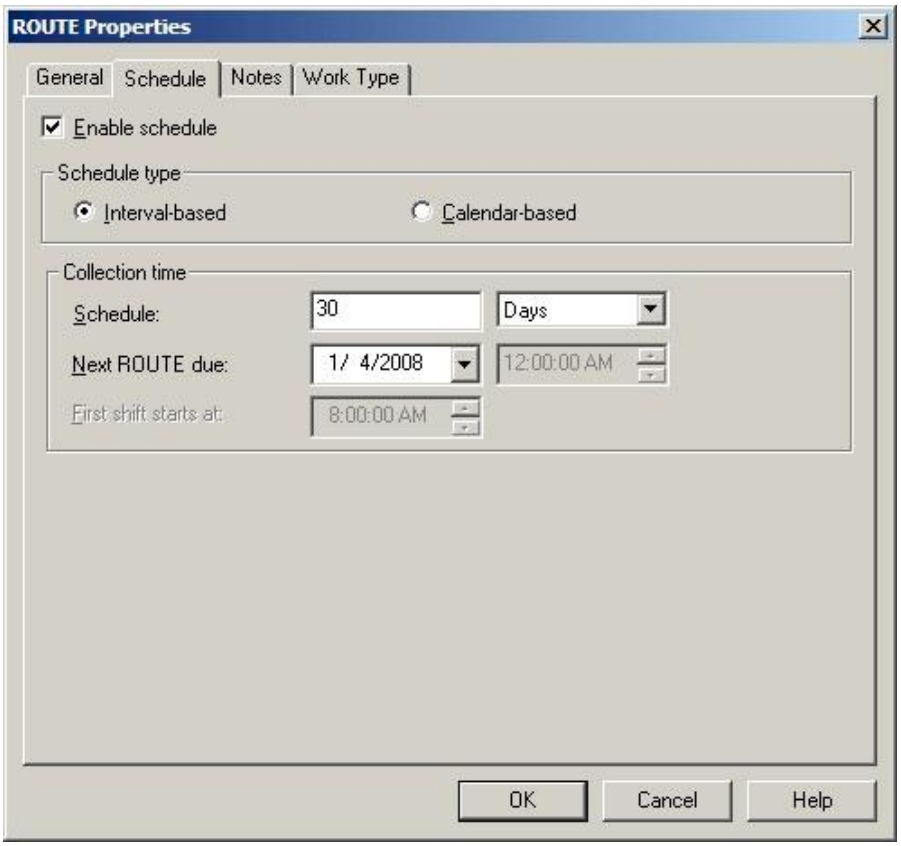


Figure 3 - 2.
The **ROUTE Properties / Schedule** Dialog – **Interval-based**.

On the **ROUTE Properties** / **Schedule** dialog, click the **Enable collection schedule** checkbox to configure the ROUTE's collection schedule.

ROUTE Properties / Schedule has schedule types:

Interval-based – Select **Interval-based** if you wish to schedule data collection at a set time interval.

and

Calendar-based – Select **Calendar-based** if you wish to schedule data collection based on a calendar date and time. Calendar-based schedules are set up in the **Customize** / **Database**'s **Compliance** dialog.

Interval-based fields include:

Schedule – Enter the ROUTE's collection interval (in days or hours, starting from the **Next ROUTE Due** entry).

Next ROUTE due – Enter the beginning collection date and time for the ROUTE. Together, the **Next ROUTE Due** and **Schedule** fields establish the ROUTE's collection schedule.

First shift starts at – Enter the time the first shift begins. This field is only available if the **Schedule** entry is in hours.

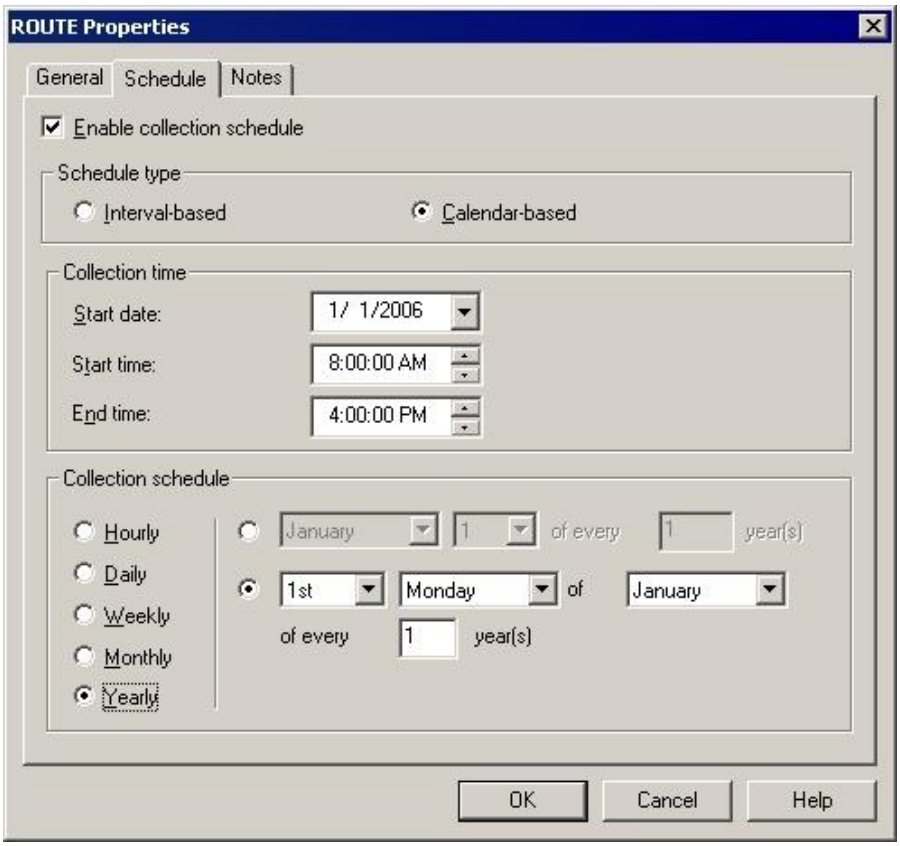


Figure 3 - 3.
The **ROUTE Properties / Schedule** Dialog – **Calendar-based**.

Calendar-based fields include:

Start date – Select the initial start date of when the data collection interval is scheduled.

Start time – Select the initial start time of when the data collection interval is scheduled.

End time – Select the time at which the ROUTE is considered overdue if data collection does not occur.

Collection schedule – Choose a collection schedule and set the appropriate dates and frequencies as described below.

Hourly – Enter the duration of shift in hour(s). (i.e., Duration of shift: 8 hrs)

Daily - Enter the frequency of the collection schedule in day(s). (i.e., Every 2 days)

Weekly – Enter the frequency of the collection schedule in week(s), and select the day of the week that the collection schedule interval will start and end on. (i.e., Every 2 weeks on Monday)

Monthly – Select the day of the month (1-31) and the frequency of the collection schedule in month(s) (i.e., Day 1 of every 1 month(s)); or select a day of the week and the **1st**, **2nd**, **3rd**, 4th, or **last** week of the month, and the frequency of the collection schedule in month(s). (i.e., The 2nd Friday of every 1 month(s))

Yearly – Select the month / day and the frequency of data collection in year(s). (i.e., January 1st of every 1 year(s)); or select a day of the week, the **1st**, **2nd**, **3rd**, 4th, or **last** week of the month, the month, and the frequency of the collection schedule in year(s). (i.e., The 2nd Friday of January every 1 year(s))

ROUTE Properties / Notes

ROUTE Properties / Notes fields include:

ROUTE instruction notes – Allows you to create, edit, and store instructions / notes relating to the ROUTE. ROUTE instructions are downloaded to the data acquisition device along with the ROUTE, and may be viewed on the DAD's LCD panel.

- Enter appropriate ROUTE properties and click **OK.** The new ROUTE's window displays.
- Use drag and drop or copy and paste operations to copy selected Groups and POINTs, from the Hierarchy or Workspace windows into the new ROUTE's window to create the new ROUTE's hierarchy list.

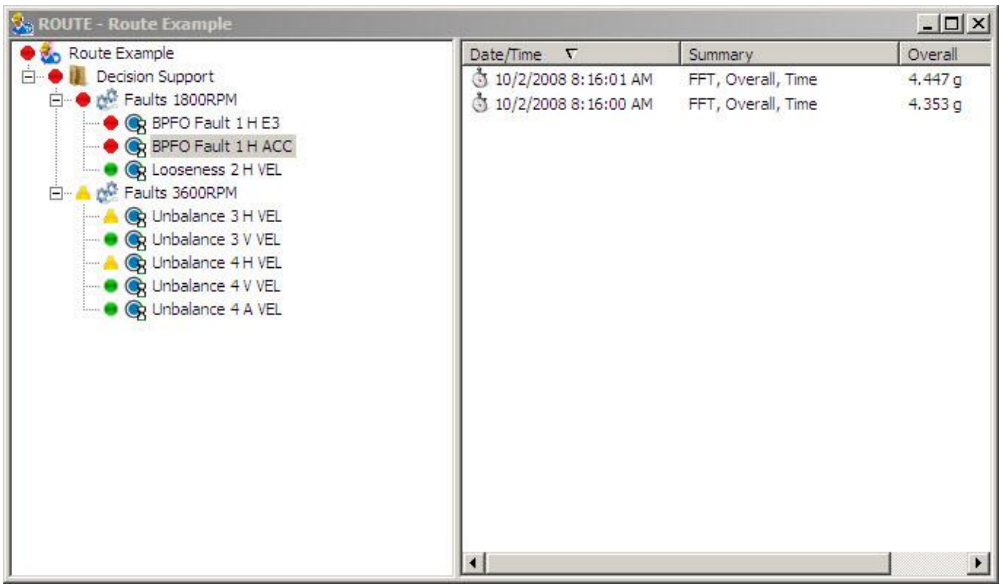


Figure 3 - 4.
The **ROUTE** Window With Copied Items.

To remove an unnecessary ROUTE:

- In the **ROUTE** dialog, select the ROUTE name.
- Click the **Remove** button. Confirm action when prompted. The selected ROUTE is removed.

To set the same measurement speed for multiple FFT measurements:

- Starting from a ROUTE, expand the appropriate machine. Beneath the machine in the hierarchy, right-click on the measurement POINT you wish to use as a reference and select Set Speed (Multiple) from the resulting context menu.

OR

- Starting from a ROUTE, expand the appropriate machine. Beneath the machine in the hierarchy, click on the appropriate measurement POINT to display its measurements in the right panel. Then, right-click on the single measurement you wish to use as a reference and select Set Speed (Multiple) from the resulting context menu.

The Set Speed (Multiple) window appears.

Synchronizing the Microlog Inspector with SKF @ptitude Inspector

> ➢ The Microlog Inspector differs from the MARLIN in the way that it communicates with SKF @ptitude Inspector. For MARLIN transfer information, reference the *Downloading ROUTEs to the MARLIN* section later in this chapter.

The Microlog Inspector's **Synchronization** feature provides automatic data transfer between the Microlog Inspector device and @ptitude Inspector software. Automatic data transfer includes:

- Establishing communications
- Uploading collected data from the device.
- Downloading a profile to the device (i.e., operator settings, ROUTEs / workspaces, previous measurement records, etc.)

Prior to using your Microlog Inspector for the first time, you must:

- Set up the device to communicate with @ptitude Inspector
- Assign a profile to your device
- Perform a synchronization to download the profile to your device.

Once the initial synchronization is performed, you can easily transfer data between the Microlog Inspector and SKF @ptitude Inspector by simply docking the device.

To set up the Microlog Inspector for data transfer:

- Set up communications on the **Microlog Inspector**. Reference your **Microlog Inspector User Manual** for details.
- On the Microlog Inspector main menu, click **Synchronize**. The Microlog Inspector communicates with SKF @ptitude Inspector and is recognized by @ptitude Inspector as an "available" device.
- In SKF @ptitude Inspector, assign a profile to the Microlog Inspector using the **Customize** menu's **Microlog Inspector Settings** dialog.

> ➢ Reference the **Microlog Inspector Settings** section in **Chapter 2, Working With Your @ptitude Inspector Hierarchy** for details on how to set up and assign profiles.

- On the Microlog Inspector, click the **Synchronize** button again to download the profile (operator settings, routes / workspaces, etc.) to the device.

You are now ready to collect data and transfer data between the Microlog Inspector device and SKF @ptitude Inspector software.

Downloading ROUTEs to the MARLIN

> ➢ The MARLIN differs from the Microlog Inspector in the way that it communicates with SKF @ptitude Inspector. For Microlog Inspector transfer information, reference the **Synchronizing the Microlog Inspector with SKF @ptitude Inspector** section earlier in this chapter.

MARLIN Transfer Overview

The MARLIN transfer function allows you to download measurement POINT setups to the MARLIN, upload collected data from the MARLIN, check the MARLIN status, and configure, clear, or reset the MARLIN .

To Set Up the MARLIN for Data Transfer:

- Connect the **MARLIN** to the host computer. Reference your MARLIN User Manual for specifics.
- Turn on the MARLIN.
- On the MARLIN, access the **Transfer** screen. The MARLIN is ready to communicate with @ptitude Inspector.
- In @ptitude Inspector, Select **MARLIN** from @ptitude Inspector's **Transfer** menu. The **MARLIN** dialog displays and the MARLIN is ready to communicate with @ptitude Inspector.
- The software automatically checks for a connection between the host computer and the MARLIN . An alert dialog displays if there is a connection error.

  > ➢ If you are using a serial connection, the software's auto detection capabilities will alert you of connection status.

- Check the dialog's **Status** tab to compare the MARLIN's current database to the current @ptitude Inspector database. If there is a database discrepancy, an error dialog appears when the download process is initiated.

Download to DAD

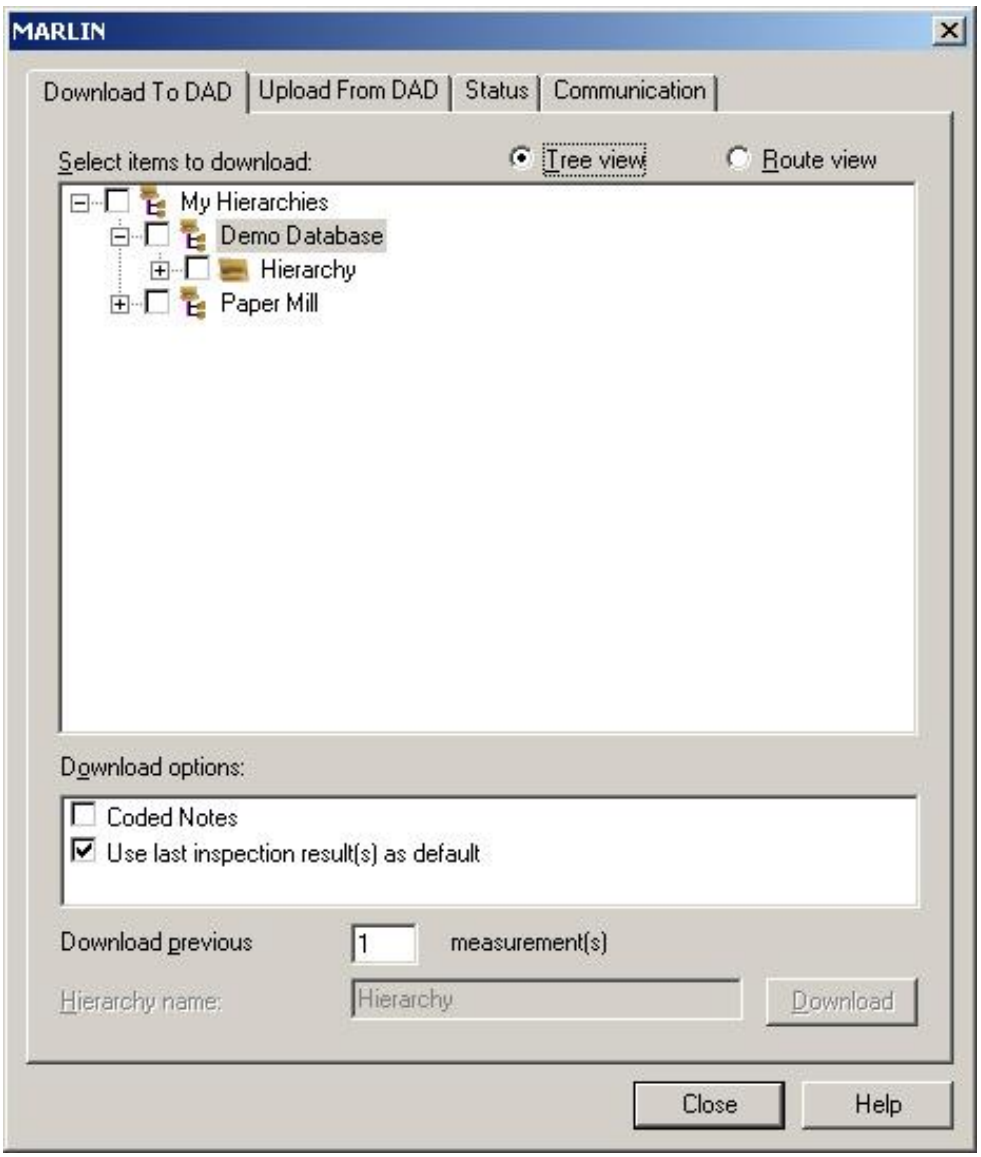


Figure 3 - 5.
The **MARLIN** Dialog's **Download to DAD** Tab Displaying **Tree View**.

Items available for download appear in the tab's **Select items to download** window. You can download items from the Hierarchy, ROUTEs, and Workspaces directly using **Tree View** or select one or more ROUTEs using **ROUTE View** by clicking the item's check box.

Tree View

Select items to download in Tree View:

- A checkmark in the checkbox indicates *all* items in the Hierarchy, ROUTE, or Workspace are selected.
- A grey checkmark indicates *some* items are selected.
- No checkmark indicates *no* items are selected.

  - By default, only Hierarhchies, ROUTEs, and Workspaces associated with the primary hierarchy display for download in **Tree View**. To display all Hierarchies, ROUTEs, and Workspaces associated with all open hierarchies, you must enable the **Allow multiple hierarchy support on DADs** option on the **Customize** / **Preferences** / **General** dialog.

ROUTE View

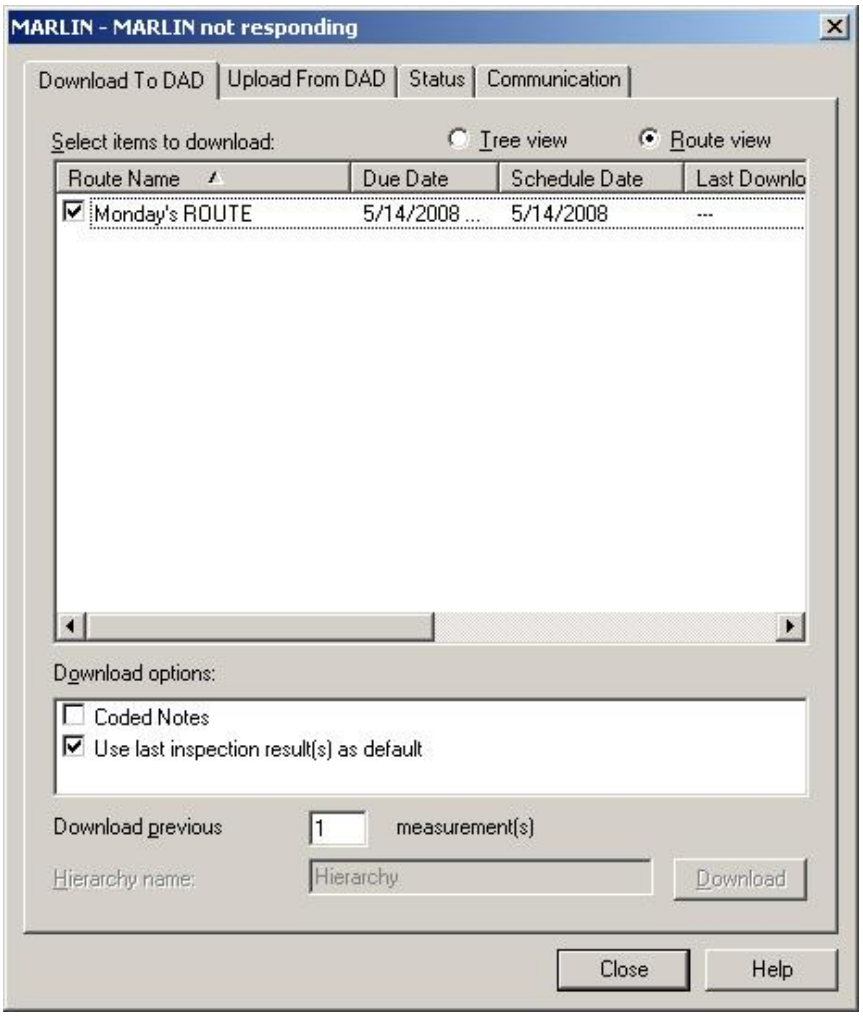


Figure 3 - 6.
The **MARLIN** Dialog's **Download to DAD** Tab Displaying **ROUTE View**.

ROUTEs are organized into six categories; **ROUTE Name**, **Due Date**, **Schedule Date, Last Download Date, Overdue Status,** and **Hierarchy.**

- Only complete ROUTEs may be downloaded. To download individual POINTs, select them from **Tree View**.
- By default, only ROUTEs associated with the primary hierarchy display for download in **ROUTE View**. To display all ROUTEs associated with all open hierarchies, you must enable the **Allow multiple hierarchy support on DADs** option on the **Customize** / **Preferences** / **General** dialog.

Download Options

There are three Download Options:

Coded Notes

If enabled, all coded notes from the **Customize** menu's **Database** dialog's **Coded Notes** tab will be downloaded to the MARLIN.

- Click to enable the **Coded Notes** checkbox.

Use last Inspection Result(s) as default

If enabled, the previous Inspection Result(s) appear selected in the MARLIN's Inspection POINT Data Collection screen.

- Click to enable the Use last Inspection Result(s) as default checkbox.

Download Previous Measurements

- Enter a number between 1 and 99 or use the arrows to indicate how many previous measurements you would like to download.

Hierarchy Name

If you select items directly from the Hierarchy list, they will appear as a specially named ROUTE in the MARLIN.

- Assign a unique name in the **Hierarchy Name** text field for identification purposes.

Download button

- Click to begin the download. The download progress displays in the progress bar.

Upload from DAD

After you have completed collecting data, re-connect the MARLIN and establish communications using the same procedure described earlier for downloading.

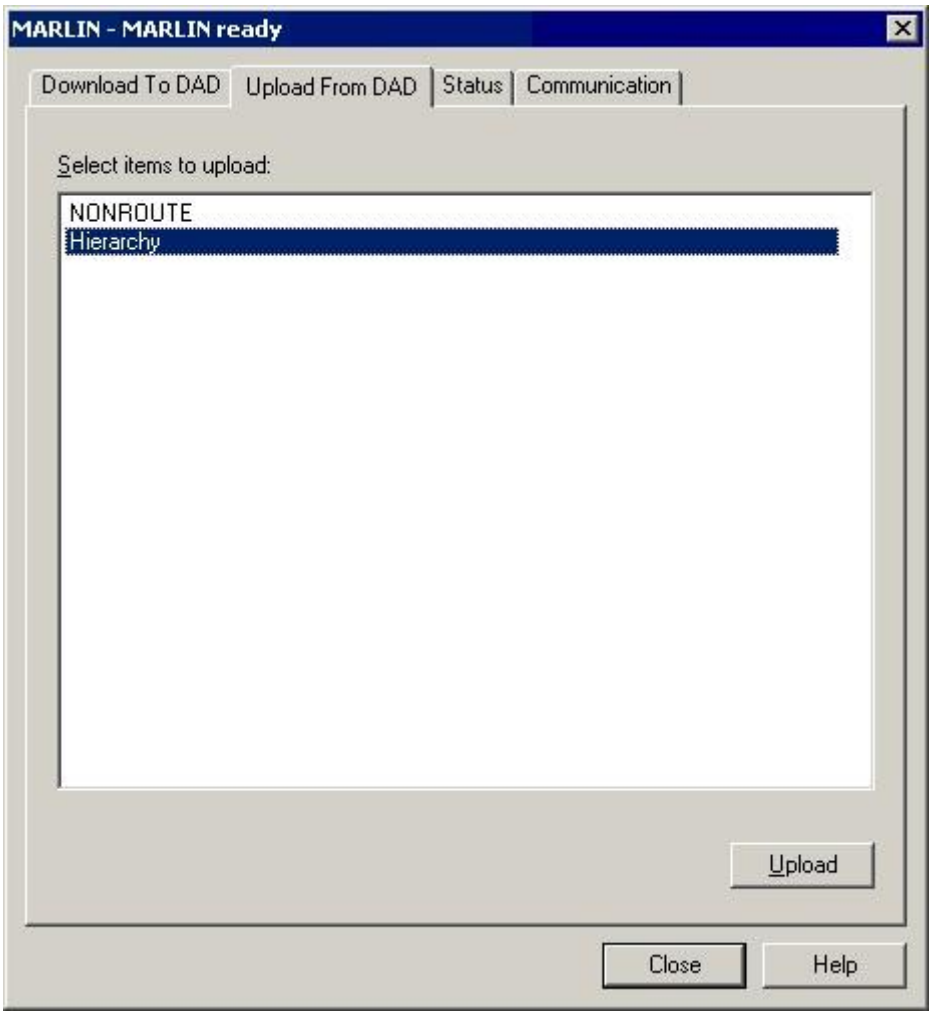


Figure 3 - 7.
The **MARLIN** / **Upload from DAD** Tab.

Select items to upload or remove – Displays all ROUTEs currently stored in the connected MARLIN.

- Select the ROUTE(s) you wish to upload or remove (multiple selections are allowed).
    - By default, only ROUTEs associated with the primary hierarchy display for upload. To display all ROUTEs associated with all open hierarchies, you must enable the **Allow multiple hierarchy support on DADs** option on the **Customize** / **Preferences** / **General** dialog.

To Upload Data:

- Click the **Upload** button to initiate the upload process. POINTs are automatically processed into the database after the upload. Process status displays on the status bar.

Status

The **Status** tab displays the connected MARLIN's status, and compares the Microlog's current database with the current @ptitude Inspector database. Status information appears in the **Device status information** window.

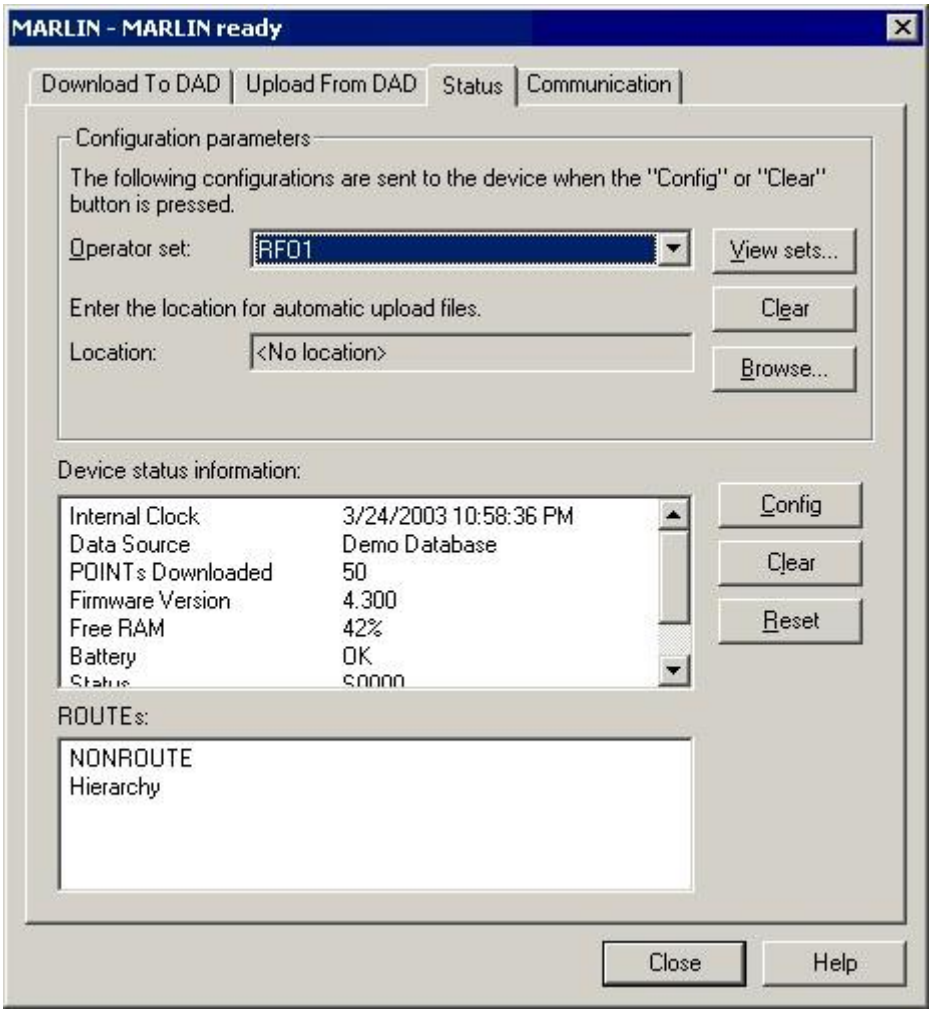


Figure 3 - 8.
The **MARLIN** Dialog's **Status** Tab.

The tab's **Configuration Parameters** area provides an option to select operator sets and download them to the DAD, and to specify a network location for MARLIN initiated uploads.

Operator sets – Select an operator set from the drop down list. The specified operator set downloads to the MARLIN unit when you click the **Clear** / **Reset** buttons.

- Click the **View Sets** button to view all operators assigned to the selected operator set.
- Select a set from the drop down list. All operators included in the selected set display in the **Operators** area.

LAN Support

@ptitude Inspector's LAN support for MARLIN allows you to upload data from a MARLIN with firmware version 4.0 or higher to a specified LAN location. While this LAN location need not be installed with the @ptitude Inspector application, it must be accessible by both a PC running @ptitude Inspector software and the MARLIN DAD. @ptitude Inspector automatically detects the upload to the specified network location and begins processing the data. The LAN support feature allows you to quickly upload data to the network instead of having to physically return to a PC running @ptitude Inspector software to initiate the upload. This allows multiple users to upload their data without "tying up" the dedicated @ptitude Inspector PC.

Location – Type in the LAN path, or use the **Browse** button to locate a network location to store MARLIN-initiated upload data. If a LAN location is not specified, the Upload screen's LAN button is disabled on the MARLIN DAD and uploads must be initiated from @ptitude Inspector.

- Press the **Config** button to download the LAN location to the MARLIN. When you initiate an upload from the MARLIN, the data is uploaded to the specified LAN location, and is then automatically detected and processed by @ptitude Inspector.
- Press the LAN Location's **Clear** button (beneath the **View Sets** button) to clear your specified LAN location. If no location is specified, uploads can only be performed from @ptitude Inspector, and may not be initiated from the MARLIN DAD.

Device status information includes:

Internal Clock – Date and time from the MARLIN's clock.

Data Source – The name of the source database for POINTs currently stored in the MARLIN.

POINTs Downloaded – Number of POINTs currently stored in the MARLIN.

Version – The MARLIN's firmware version number.

Free RAM – The percent of the MARLIN's memory that is free for storage.

Battery – The MARLIN's battery voltage level.

Status – Displays the MARLIN's status string located on the MDM.

Three command buttons appear in this tab. They are:

Config – Use this option to change databases, or when the MARLIN's internal clock is incorrect. It updates the MARLIN's status information to match those of the host computer. The **Config** button also downloads the entered LAN location (if applicable) to the MARLIN for MARLIN initiated uploads.

Clear – Use this option to clear the entire MARLIN. It erases all data, SETs, Machines, POINTs, ROUTEs, ROUTE Instructions, non-ROUTE POINTs, and coded notes stored in the MARLIN. All existing operator names are removed and replaced with the operators in the selected operator set. It does not change the MARLIN's menu settings.

Reset – Use this option to clear collected data but leave the downloaded SETs, Machines, and POINTs. It deletes all spectral data, deletes all non-ROUTE POINTs and POINT data, and resets the current measurement data to zero for all POINTs (current values are retained as LAST values). ROUTEs, SETs, Machines, and POINT sequence and measurement instructions are not affected. This allows you to take data for a ROUTE, upload it, reset the data out of the Microlog without losing the ROUTEs, SETs, Machines, or POINTs, and then take data on the same ROUTEs, SETs, Machines, or POINTs again.. The reset option also downloads operator names within the selected operator set to the MARLIN. The operator names are appended to the device's operator list.

The **ROUTEs** area displays all ROUTEs present on the MARLIN device.

Communication

Communication options control communication between the software and the MARLIN. Configure communication settings in the **Communication** tab.

Connection settings include:

Communication type - Select the **Serial** communication setting from the drop-down list to communicate using a serial cable. Select the **ActiveSync** communication setting from the drop-down list to communicate using Microsoft's ActiveSync (via USB, serial, TCP/IP, or whatever other communication protocols ActiveSync supports).

- Selecting **USB** communication type disables the **Port** and **Serial Baud Rate** drop-down lists. Use ActiveSync's **Connection Settings** to configure communication parameters.
- Refer to Microsoft.com for more information about ActiveSync communication.

Port (COM1, COM2, COM3, COM4) – Used in **Serial** mode. Specify the host computer's COM port you are using.

Serial Baud Rate - Set the baud rate for direct, hard-wired communications. This setting must match the MARLIN's Baud Rate setting.

Reconnect - Click the **Reconnect** button to reconnect your modem connection between the MARLIN and the host computer.

- Click the **Close** button when finished.

Sync Data

Sync Data is the term used for automatic data synchronization between the MARLIN device and @ptitude Inspector. Data synchronization is initiated from the MARLIN device when it is docked.

- For more information about initiating Sync Data, refer to your MARLIN Firmware User Manual.
- Before Sync Data can occur, you must enable the MARLIN Sync Data user preference.

During data synchronization, @ptitude Inspector automatically uploads all collected ROUTE data from the MARLIN, clears the device, and downloads new ROUTE information to the device.

- If you download a ROUTE or workspace, the entire ROUTE or workspace will be re-downloaded upon each Sync Data operation. Likewise, if you download a Hierarchy, only the POINTs will be re-downloaded.

When data synchronization is in progress, a progress bar displays in @ptitude Inspector. Once complete, the progress bar simply goes away, and you may continue normal operations.

Manual Data Entry

Inspection

Use the **Insert** menu's **Manual Entry** dialog to manually enter inspection measurement values into your @ptitude Inspector database. This feature allows you to store inspection measurements. The **Manual Entry** dialog allows you to manually enter one inspection measurement per POINT.

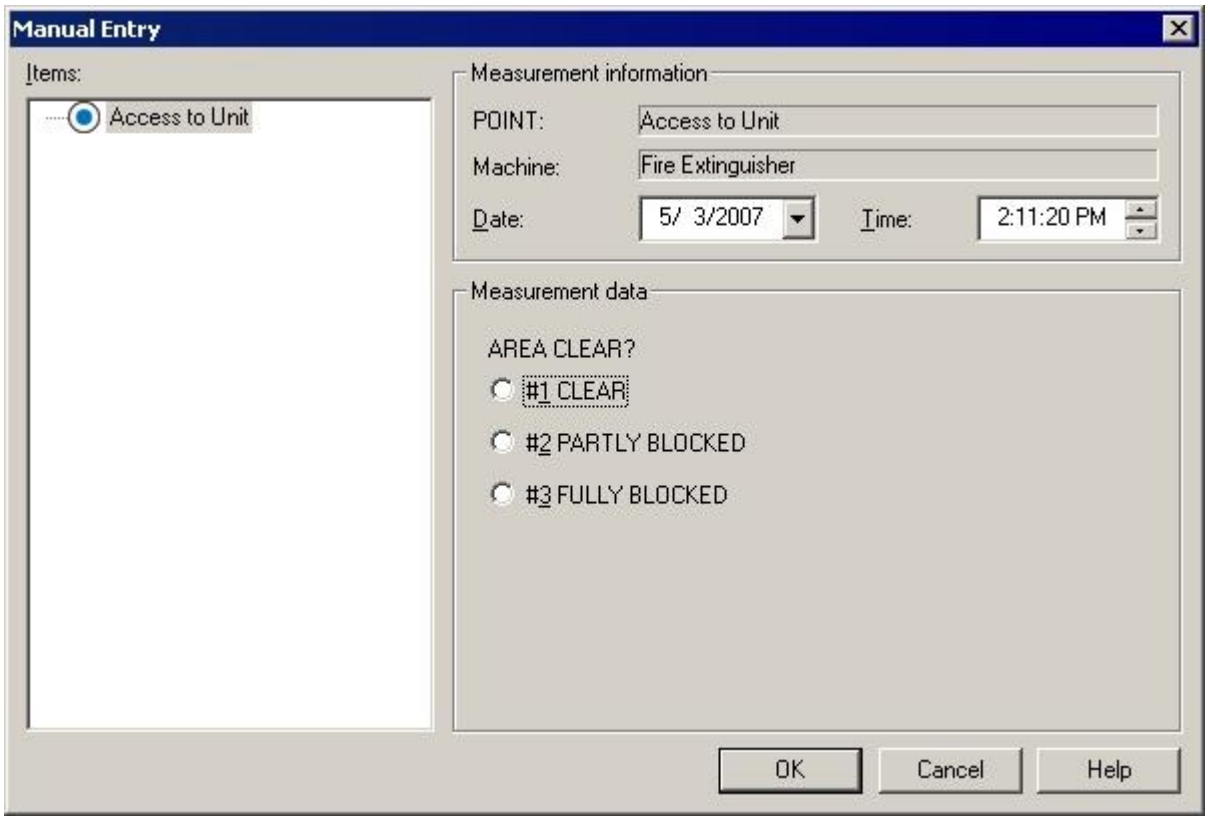


Figure 3 - 9.
The Manual Entry Dialog for Inspection POINTs.

To manually enter data:

- Select a POINT from the **Items** area. The **Measurement information** area updates to show the current measurement's **POINT** name, **Machine**, **Date** and **Time** settings.
- Use the option buttons (*Single-Select Inspection POINTs*) or checkboxes (*Multi-Select Inspection POINTs*) to select the value in the **Measurement data** area.
- Click the **Set** button.
    - ➢ By default, the current date / time is applied to the entered POINT value. Select desired date and time from the drop down menus to edit these fields as needed.

To clear any field:

- Place the cursor in the desired field and click the **Clear** button.
- Click **OK** to store the entered values and automatically re-process alarms.
- Click **Cancel** to undo settings.

MCD

Use **Insert** menu's **Manual Entry** dialog to manually enter MCD measurement values into your @ptitude Inspector database. This feature allows you to store, view, and analyze measurements made with the MCD. The **Manual Entry** dialog allows you to manually type in one set of MCD values per POINT.

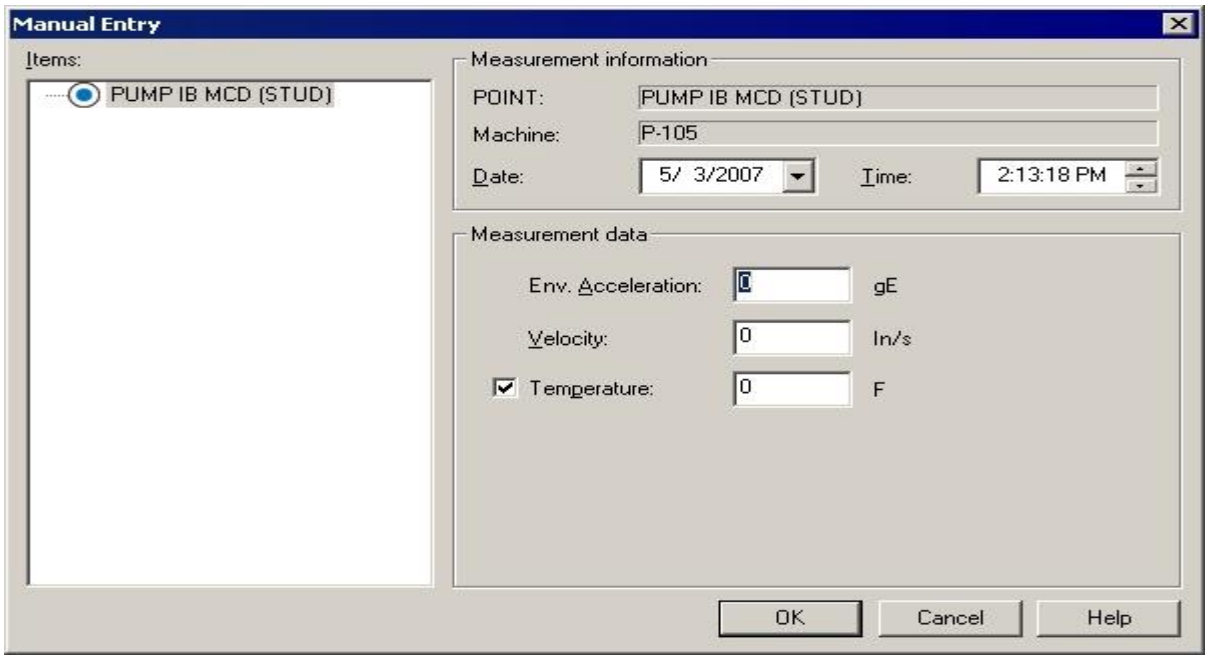


Figure 3 - 10.
The Manual Entry Dialog for MCD POINTs.

To manually enter data:

- Select a POINT from the **Items** area. The **Measurement information** area updates to show the current measurement's **POINT** name, **Machine**, **Date** and **Time** settings.
- Use the text boxes to enter each MCD value (**Env. Acceleration**, **Velocity**, and **Temperature**) in the **Measurement data** area.
- Click the **Set** button.
    - By default, the current date / time is applied to the entered POINT value. Select desired date and time from the drop down menus to edit these fields as needed.

To clear any field:

- Place the cursor in the desired field and click the **Clear** button.
- Click **OK** to store the entered values and automatically re-process alarms.
- Click **Cancel** to undo settings.

4
Displaying Graphic Plots

Overview

After uploading your measurement data to @ptitude Inspector, you can easily display the collected measurements in various plot formats for machinery analysis purposes.

Graphic **MARLIN / Microlog Inspector** plot formats include:

- MCD Plot
- Inspection Plot
- Trend Plot
- Spectrum Plot

How To Display Graphic Plots

@ptitude Inspector offers multiple methods for displaying measurement data in plot format. Each method has its advantages. However, regardless of the selected method, the first step in displaying plots is to open any view that contains POINTs (Hierarchy, ROUTE, Workspace, Plot, and Alarms view). The second step is to select the measurement POINT(s) whose data you wish to display in plot form.

Then use one of the following methods for displaying measurement data in graphic plot format.

- The **File** menu's **Print** option may be used at any time to print the contents of the "active" window (including graphic display windows).

Displaying Plots Using Toolbar Buttons

@ptitude Inspector has toolbar buttons for commonly used plots.

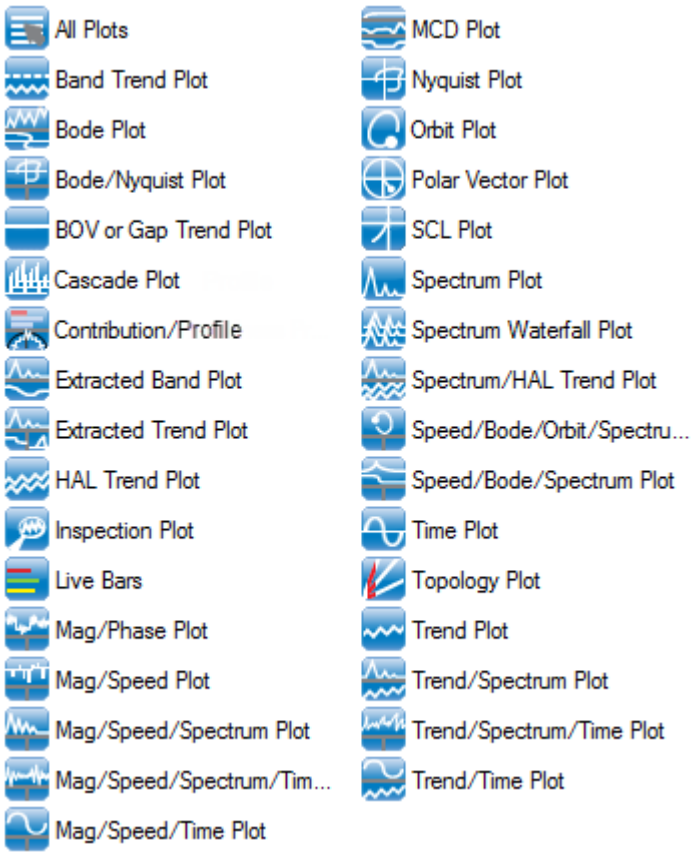


Figure 4 - 1.
Plot Toolbar Buttons (Shown Here as Two Columns).

- To select multiple POINTs for display in a single plot, you must first select the machine in which the POINTs list in the hierarchy's left panel, then select the desired multiple POINTs in the hierarchy's right panel.
- To select POINTs from multiple machines, you must first copy the desired POINTs to a Workspace window.

To display graphic plots using the toolbar:

- Select (highlight) the POINT(s) you wish to display in the Hierarchy**,** ROUTE**,** Workspace**,** or Alarms windows.
- Click one of the toolbar's graphic display buttons to display the selected POINTs or measurement(s) in a specific type of plot.

- Click the **All Plots** toolbar button to display the **All Plots** dialog. From this dialog, you may select the plot type to display from all available plots, rather than only the commonly used plot types represented with toolbar buttons.

  - Different plot display toolbar buttons may be manually added using the **Customize** menu's **Toolbars** option. Custom toolbars are detailed in **Appendix A, SKF @ptitude Inspector Toolbars.**

Displaying Plots Using the View Menu

View menu graphic display operations are similar to toolbar button graphic display operations. The **View** menu allows you to display every graphic plot type that applies to the selected POINT(s).

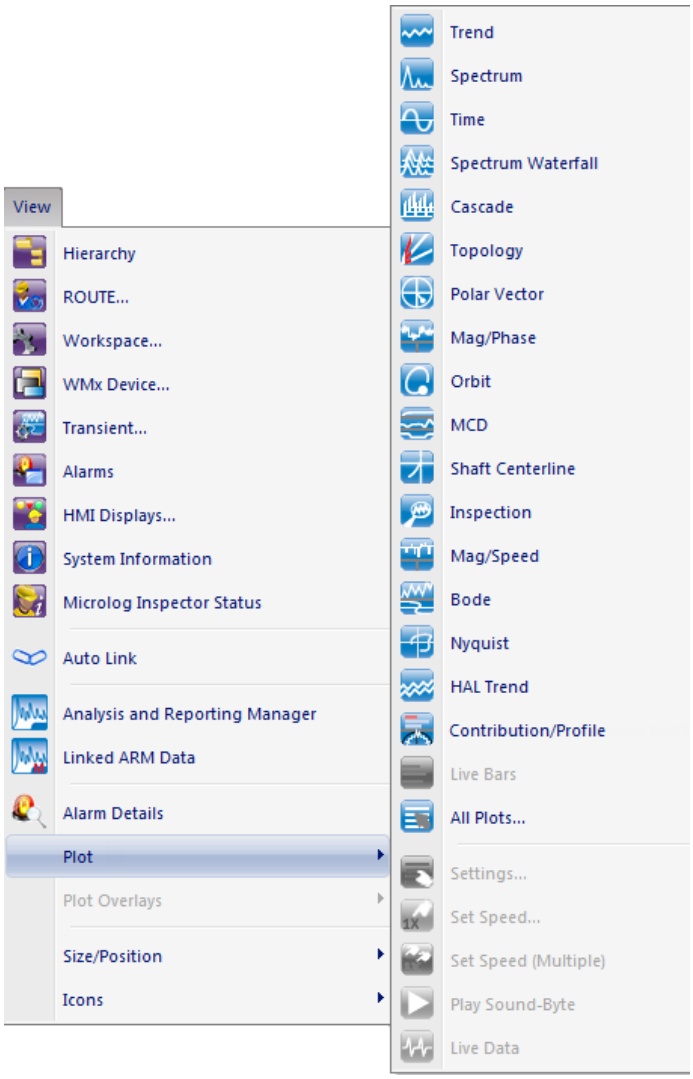


Figure 4 - 2.
The **View** Menu's **Plots** Option.

To display graphic plots using the View menu:

- Highlight the POINT(s) you wish to display in the Hierarchy, ROUTE, Workspace, or Alarms windows.
- Select the **View** menu's **Plot** option. Select one of the visible plot types, or select **All Plots** for more selections. All plot types display in the dialog.

Displaying Plots Using the POINT's Context Menu

You can also display a plot directly from selected single or multiple POINTs using the context menu.

To display a plot using the context menu:

- Select POINT(s) from a Hierarchy, ROUTE, Workspace, or Alarm window.
- Using your mouse, right click to activate the context menu.

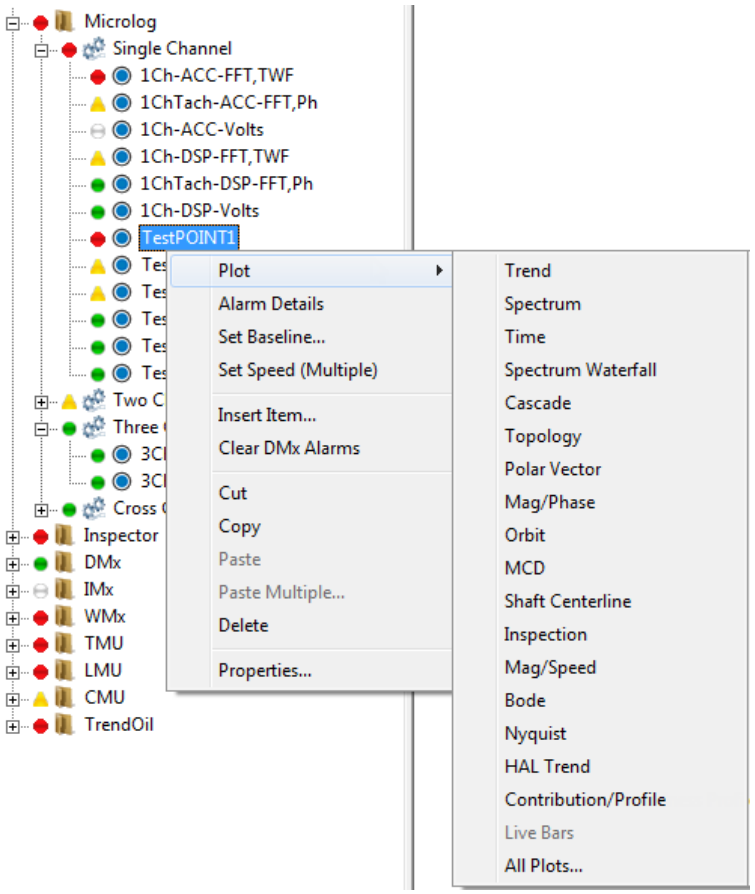


Figure 4 - 3.
Selecting a Plot from the Context Menu.

- Select the desired **Plot** type. The selected plot type displays in a plot window for the selected POINT(s).

  ➢ You can also use the right-click context menu to display a plot directly from a selected single measurement data record or multiple measurement data records.

Plot Window

The Plot window displays collected measurements in various graphic plot formats for machinery analysis purposes.

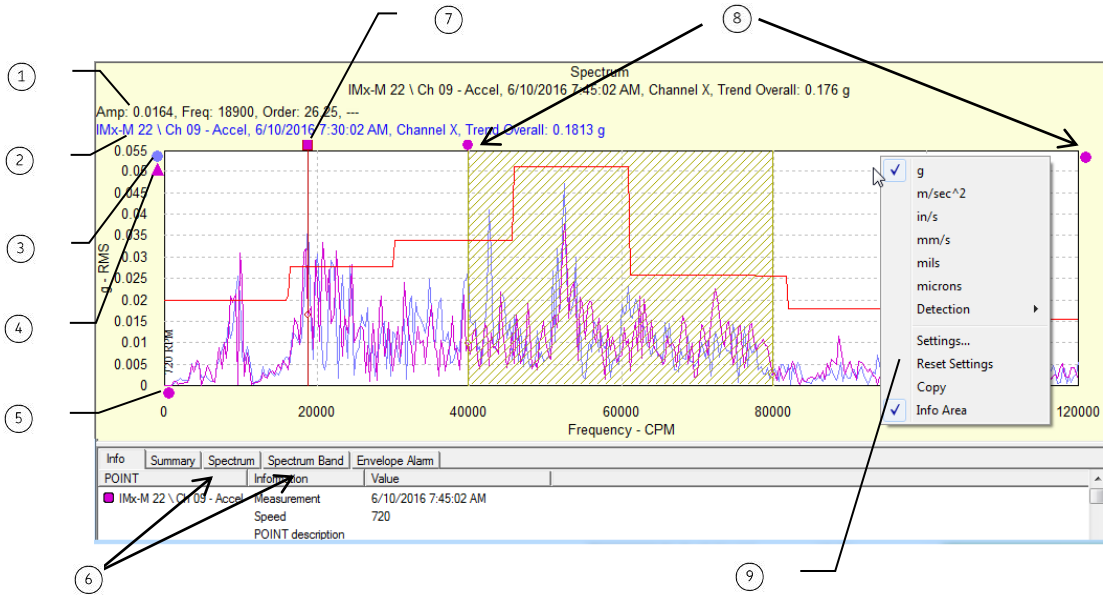


Figure 4 - 4.
Plot Window.

1. cursor feedback
2. mouse feedback
3. inactive plot line
4. active plot line
5. running speed anchor
6. various overlay tabs
7. active overlay
8. inactive overlays
9. right-click context menu

Plot Window Overview

The **Plot** window's title bar displays the plot type displayed for the current POINT. The **Machine** name (from the hierarchy) corresponding to the POINT displays in front of the POINT name (for a single POINT). The Machine and POINT name display in the plot window's top center area for all plots. The date / time stamp and overall value display for spectrum and time plots. Multiple POINTs are not individually identified.

There are two areas in the Plot window. The top area is the plot area. The lower part is the information area.

- You may re-size the entire Plot window, and/or either of the window's areas, for customized viewing. You may also hide the information area automatically (using **Preferences**) or manually (using the toolbar or context menu).
- The status of the information area affects plot print-out. If a plot is printed when the **Info** tab is displayed, the **Info** tab's information prints along with the plot. If a plot is printed when the **Info** tab is hidden, the **Info** tab's information *does not* print with the plot.

Plot Window Information Area

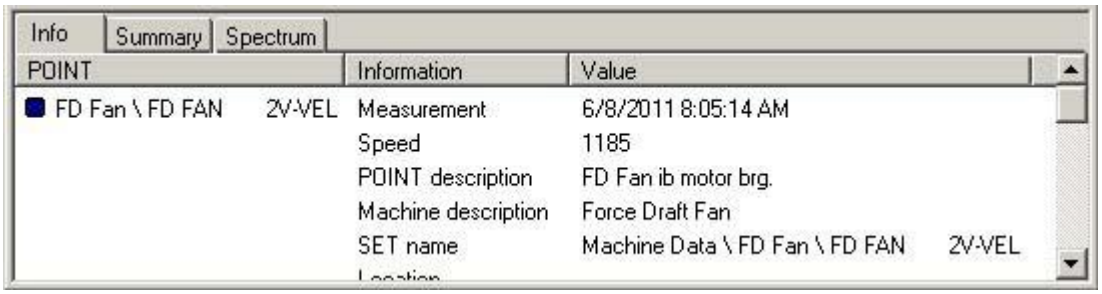


Figure 4 - 5.
Plot Window Information Area.

The information area's tabs display various plot information for the active plot.

Info tab – Displays general information for the active plot.

Summary tab – Displays measurement summary information for all POINTs displayed on the plot.

Plot type tab (Trend, Spectrum, etc.) – Displays information for each *single* cursor on the active plot.

Other tabs appear in the information area depending on the type(s) of overlay(s) used on the current plot, and display information specific to each overlay type.

Plot Feedback Areas

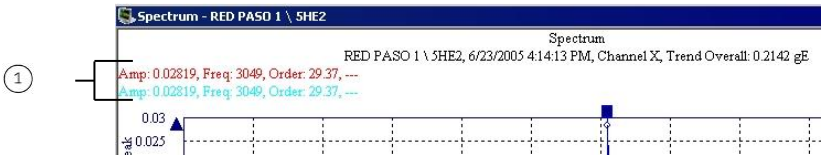


Figure 4 - 6.
Portion of Plot Window.

1 feedback areas

The first line displays information corresponding to the active cursor overlay's current position.

The second line displays information corresponding to the mouse pointer's current position (when positioned over a plot item).

Plot Window Operations

Mouse Operations

There are several ways to work within the Plot window. The mouse can be used to display specific plot information. The mouse's pointer changes to an up arrow (↑) when placed over a plot item. Typical plot items include overlay, plot line (trace), anchor, any object with feedback information, and context menus.

Overlays

Plot "overlays" superimpose cursors, alarms, text annotations, and frequency markers on displayed plots. Each overlay displays an "anchor" which you use to manipulate the overlay.

Anchors

Anchors indicate overlays and plot lines on the active plot. Anchors also identify the active status of an overlay and plot line (trace).

The *Active* plot line anchor is indicated using a **triangle** icon. Plot line anchors display on the plot's left.

The *Active* overlay anchor is indicated using a **square** icon. Active overlay anchors indicate which plot's data is displayed using the plot's color in the overlay's square icon.

Inactive plot line and overlay anchors are indicated using **circle** icons.

- Double-click an overlay's anchor to switch it to another plot.

Some overlay anchors appear at the top of the plot, others appear to the plot's right. Band cursor, harmonic cursor, sideband cursor, and single cursor anchors display across the top of the plot, directly above their respective overlays. Band alarm, envelope alarm, frequencies, curve fit, overall alarm, and peak cursor anchors display on the plot's right. The running speed anchor displays beneath the plot.

Many anchors indicate overlay position in respect to the plot's X and/or Y axis. Anchors provide easy access to the plot item's right-click context menu. For example, to access the settings dialog for your frequencies overlay, right-click on the frequency overlay anchor to launch the frequencies **Settings** dialog.

If two or more traces are displaying on a plot and an overlay is added to the plot, it automatically attaches itself to the *active* plot line (trace).

Text annotations (temporary textual notations) may be placed anywhere on the plot. Text annotations do not have anchors.

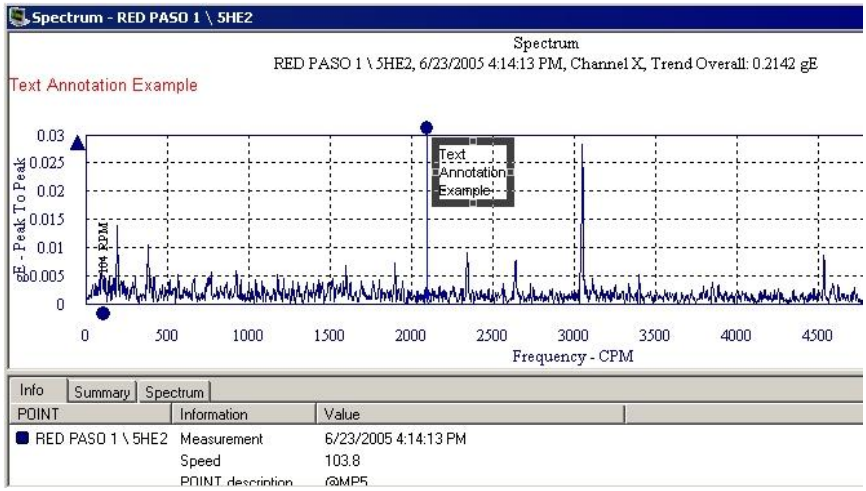


Figure 4 - 7.
Plot Window with Text Annotation.

Plot Line (Trace) Right-Click Context Menu

Position the cursor over the plot line and using your mouse, right-click to access the plot line context menu. Menu options include:

Lock Trace – Enable this option to "lock" the selected plot line data so it will remain visible when auto linking is used. This allows you to compare the "locked" plot line data to the new data that is added or removed when autolinking is used.

Remove – Removes trace from plot.

Properties – Displays **POINT Properties** dialog for the plot's active POINT.

Go to Hierarchy – Displays the Hierarchy window with the selected hierarchy item highlighted for easy identification.

Priority – Assign a priority level to the Machine the POINT is under.

Plot Right-Click Context Menu

Position the cursor over the plot background and using your mouse, right-click to access the plot context menu. Menu options include:

Plot Specific Options – Plot options display in the menu's top area (if available), allowing you to configure the plot's content. Which options appear (if any) depends upon the current plot type.

For example, you can convert the units in an acceleration, velocity, or displacement spectrum plot. Unit types display in the menu's top area and are available for selection.

Settings – Launches the **Settings** dialog for the current plot type. This dialog allows you to change the way the plot displays. For example, use the **Settings** dialog to change axis ranges.

Reset Settings – Resets to default plot settings. Use **Reset Settings** to clear all settings you made and reset the plot window based on its current content.

Copy – Copies the plot image to the clipboard.

Info Area – Show / **Hide** the current plot's information area.

- Square icons on a trend plot line indicate the measurement is included in calculations for mean and standard deviation (as in the **Info** tab) and statistical alarm generation. Use the single cursor's context menu or **Measurement Properties** to change the "include" status.

Overlay Anchor Right-Click Context Menu

The Overlay anchor right-click context menu provides quick access to the overlay's options (e.g. **Remove** the overlay, or if more than one trace is displayed, move the overlay to the **Next Trace**, etc.)

Drag and Drop Operation

Drag and drop operation allows you to easily display plots for different measurements. These measurements can belong to the same POINT, or to different POINTs. By default, when the POINT is selected, the plot is displayed for the POINT's last measurement. The drag and drop feature allows you to override this default setting and display specific measurements on the plot.

You can also drag and drop to view multiple POINTs on the same plot. Simply drag the desired POINT(s) and/or measurement(s) into the open plot window.

Multiple Measurement and Channels in Plots

It is possible to have multiple measurements from one or more POINTs represented in a plot, either by selecting them when opening the plot, or by dragging and dropping additional measurements onto an open plot.

In trend plots, multiple measurements are represented as individual data points on the plot. A plot anchor is located on the left of the plot for each measurement represented in the plot.

Inactive plot line and overlay anchors are indicated using **circle** icons.

The *Active* plot line anchor is indicated using a **triangle** icon.

The active measurement determines the cursor feedback and information window's content and overlay settings. You may toggle between the measurements by clicking on the appropriate anchor.

Zoom Operation

The zoom operation allows you to easily zoom in and out on the plots for a closer look. You may zoom in and out one of two ways:

- Using the zoom buttons on the toolbar
- Using the mouse scroll wheel

To zoom in / out on a plot using the zoom buttons:

Figure 4 - 8.
Plot Window Zoom Buttons.

① activates zoom
② zooms out

- Activate the zoom by clicking the left magnifying glass.
- Click and drag across the area of the plot to which you would like to zoom.
- Click the right magnifying glass to zoom out.

To zoom in / out using the mouse scroll wheel:

- Position your cursor over the area of the plot to which you would like to zoom.
- While holding the Ctrl key, roll the mouse scroll wheel up or down. Rolling up causes the plot to zoom in, while rolling down causes the plot to zoom out.

Plot Navigation

While viewing a plot, use the arrow keys on your keyboard to navigate to the next / previous measurement on the plot or to the next / previous POINT's plot.

To navigate to the next / previous measurement on the plot:

- While holding the Ctrl key, press the left arrow to display the previous measurement, or press the right arrow to display the next measurement.

To navigate to the next / previous POINT's plot:

- While holding the Ctrl key, press the up arrow to display the plot for the previous POINT, or press the down arrow to display the plot for the next POINT.

Set Speed (Multiple)

Use the Set Speed (Multiple) feature to set the same measurement speed for multiple FFT measurements.

- Starting from an FFT measurement plot, right-click on the single cursor and select Set Speed (Multiple) from the resulting context menu.

The Set Speed (Multiple) window appears.

Plot Types

Machinery measurements can be displayed in a variety of graphic display formats that aid machinery analysis. Each graphic display type is detailed below.

For each type of graphic display, @ptitude Inspector provides settings to manipulate the plot display and to gain valuable analysis information. These settings dialogs are available from the @ptitude Inspector **View** menu and from the toolbar (which changes according to the active plot display type). Each plot's settings dialogs are also detailed below.

MCD Plot

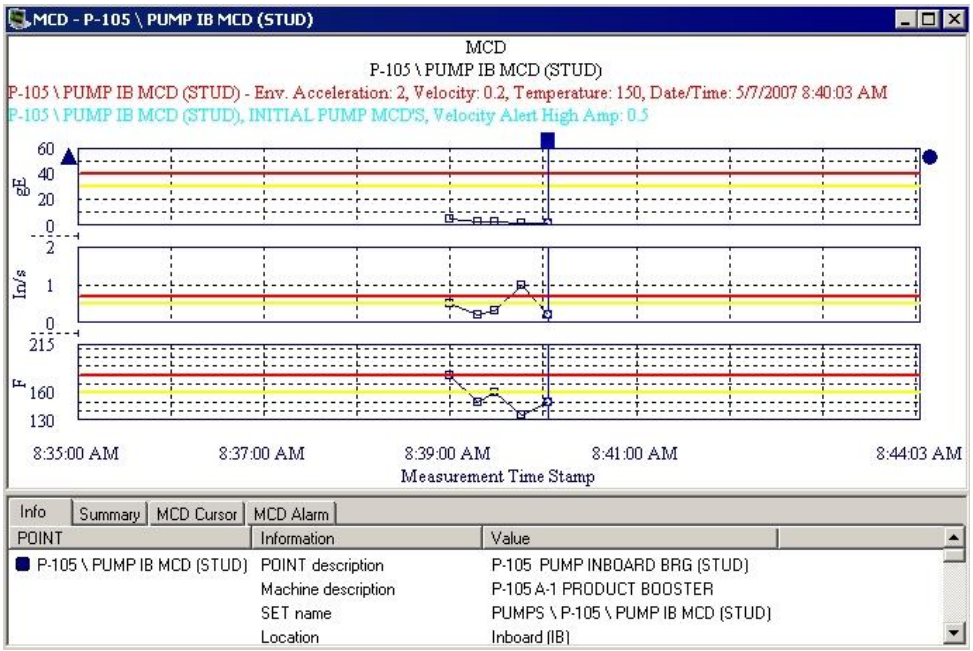


Figure 4 - 9.
Example of an MCD Plot.

MCD plots allow you to view trend plots for the three values of an MCD measurement: velocity, Enveloped Acceleration, and temperature. Trend plots are an easy and accurate method of detecting gradual changes in machinery condition, changes that might otherwise be overlooked.

In an MCD plot, the X-axis (horizontal axis) of the plot represents the time and date of the measurement. Each Y-axis (vertical axis) represents the amplitude of each MCD measurement.

In addition to displaying MCD plots for individual POINTs, you can display multiple POINTs' MCD trends (from the same machine or from different machines) in one graphic display window. This allows easy comparison between various POINTs' trends.

The active plot (Velocity, Enveloped Acceleration, or Temperature) determines the information window's content and overlay settings.

- Square icons on an MCD plot indicate the measurement is included in calculations. Use the single cursor's context menu or **Measurement Properties** to change the "include" status.

See **MCD Plot Settings** for display parameters that can be modified to change plot display.

MCD Plot Settings

To access the MCD Plot Settings Dialog:

- With an MCD Plot displayed, select **Settings** from the **Plot** option on the **View** menu or use the toolbar button. The **MCD Plot Settings** dialog displays, specific to the active plot.

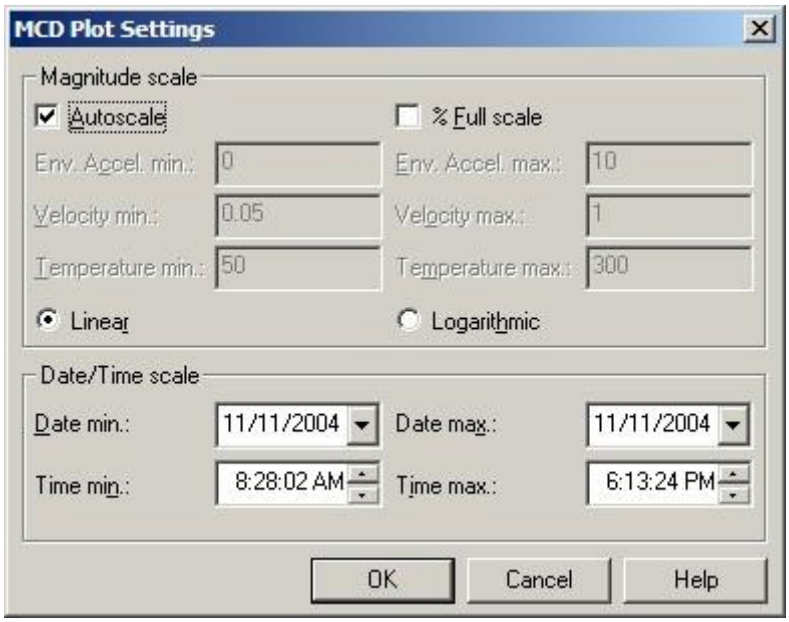


Figure 4 - 10.
The **MCD Plot Settings** Dialog.

Enter desired settings in the following fields:

Autoscale - Click the checkbox to enable **Autoscale.** Enabling **Autoscale** automatically scales the initial amplitude axis so it is approximately 120% of the largest amplitude. De-select the checkbox to disable. Disabling **Autoscale** displays the MCD trend plots on the same full scale vertical axis used when it was recorded.

% Full Scale - Click the checkbox to enable **% Full Scale**. When enabled, the amplitude axis displays as a % value of the full scale.

Magnitude Scale - Enter the minimum and maximum magnitude scale values for each MCD measurement (**Velocity**, **Acceleration**, and **Temperature**) in the designated text boxes. This changes the range of values displayed on the Y-axis. The value entered here is an amplitude value if **% Full Scale** is *not* checked. The value is a percent if **% Full Scale** is checked.

Magnitude Lin / Log - Linear / Logarithmic - Select **Linear** scaling to space out data equally. Select **Logarithmic** scaling to emphasize lower values.

Date / Time scale - Enter minimum and maximum date and time.

- Click **OK** to update the plot with the new settings.
- Click **Cancel** to close the dialog without modifying the plot.

  ➢ The **Settings** dialog is also available from the plot's context menu.

MCD Plot Settings - Combined Plot

➢ The *combined* **MCD Plot Settings** dialog differs slightly than the *stacked* **MCD Plot Settings** dialog.

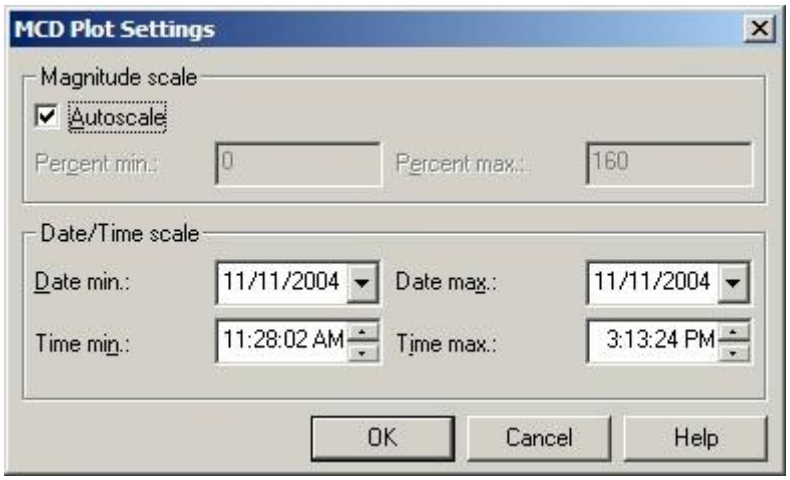


Figure 4 - 11.
The **MCD Plot Settings** Dialog.

Enter desired settings in the following fields:

Autoscale - Click the checkbox to enable **Autoscale.** Enabling **Autoscale** automatically scales the initial amplitude axis so it is approximately 120% of the largest amplitude. De-select the checkbox to disable. Disabling **Autoscale** displays the MCD trend plots on the same full scale vertical axis used when it was recorded.

Percent Min / Max - Combined MCD plots automatically display amplitude values as Percent Full Scale. Enter the minimum and maximum percentage scale values for the combined MCD plot in the designated text boxes. This changes the range of values displayed on the Y-axis.

Magnitude Linear - Select **Linear** scaling to space out data equally. **Logarithmic** not available for combined MCD plots.

Date / Time scale - Enter minimum and maximum date and time.

- Click **OK** to update the plot with the new settings.
- Click **Cancel** to close the dialog without modifying the plot.

  ➢ The **Settings** dialog is also available from the plot's context menu.

Inspection Plot

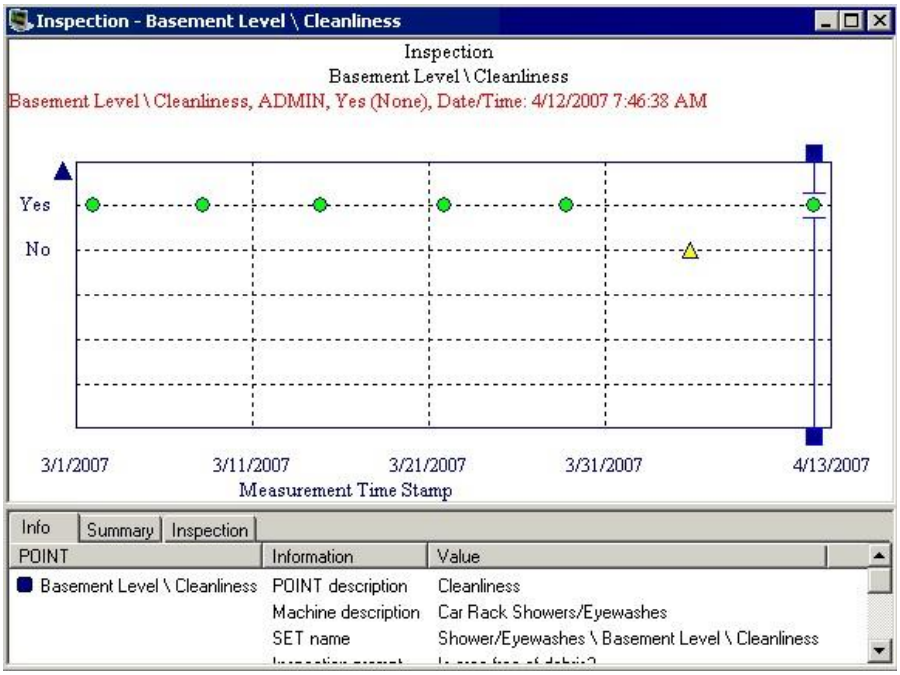


Figure 4 - 12.
Example of an Inspection Plot.

Inspection plots allow you to graphically view inspection measurement results for up to six points simultaneously. Inspection plots are an easy and accurate method of viewing inspection history over time.

In an Inspection plot, the X-axis (horizontal axis) of the plot represents the time and date of the measurement (**Measurement Time Stamp**). Each Y-axis (vertical axis) represents the inspection result options for the POINT's inspection prompt. Results and conditions are indicated by a *red square* for danger conditions, a *yellow triangle* for alert conditions, and a *green circle* for clear conditions.

In addition to displaying Inspection plots for individual POINTs, you can display multiple POINTs' Inspection histories (from the same machine or from different machines) in one graphic display window. This allows easy comparison between various POINTs' inspection histories.

See **Inspection Plot Settings** for display parameters that can be modified to change plot display.

Inspection Plot Settings

To access the Inspection Settings Dialog:

- With an inspection plot displayed, select the **View** menu's **Plot / Settings** option, use the settings toolbar button, or right-click to display the plot's context menu and select the **Settings** option.

Enter desired settings in the following fields:

Date / Time scale - Enter minimum and maximum date and time.

- Click **OK** to update the plot with the new settings.
- Click **Cancel** to close the dialog without modifying the plot.
    - ➢ The **Settings** dialog is also available from the plot's context menu.

Trend Plot

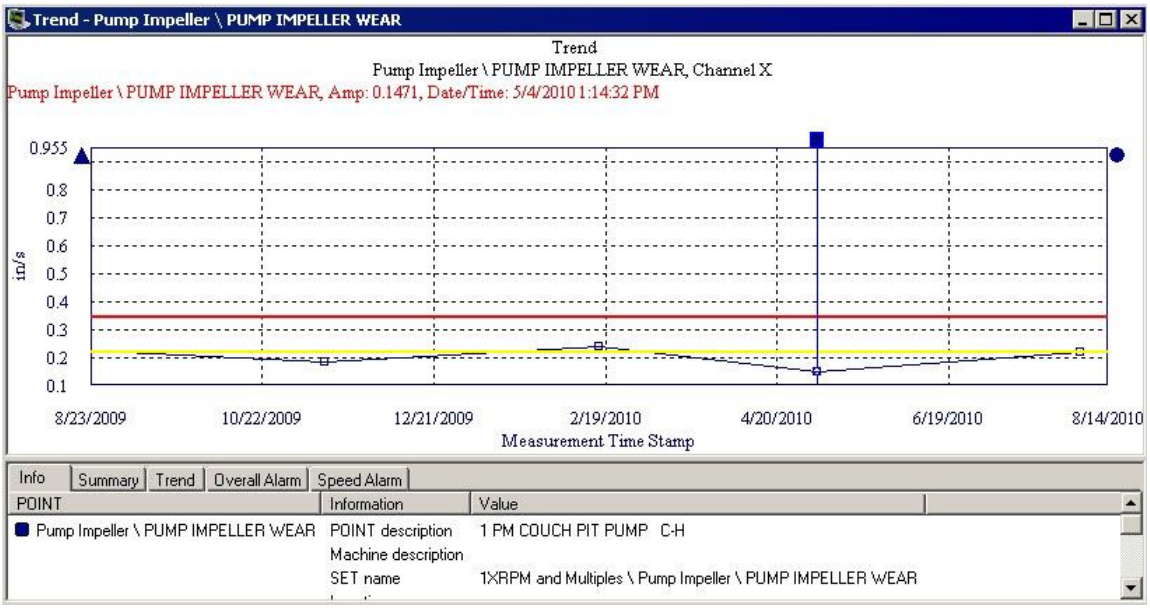


Figure 4 - 13.
Example of a Trend Plot.

Trend plots allow you to easily compare a POINT's most recent reading against its previous readings and its alarm set up, allowing you to see how the POINT is "trending" over time. Trend plots are an easy and accurate method of detecting gradual changes in process conditions and changes that might otherwise be overlooked.

In addition to displaying trend plots for individual POINTs, you can display multiple POINTs' trends (from the same machine or from different machines) in one graphic display window. This allows easy comparison between various POINTs' trends.

In a trend plot, the X axis (horizontal axis) represents time and the Y axis (vertical axis) represents magnitude.

- ➢ Square icons on a trend plot indicate the measurement is included in calculations. Use the single cursor's context menu or the **Measurement Properties** dialog to change the "include" status.

Trend Settings

To access the Trend Settings Dialog:

- With a trend plot displayed, select the **View** menu's **Plot / Settings** option, use the settings toolbar button, or right-click to display the plot's context menu and select the **Settings** option.

Magnitude scale fields include:

Autoscale - Enabling **Autoscale** automatically scales the initial amplitude axis so it is approximately 120% of the largest amplitude. Disabling **Autoscale** displays the spectrum on the same full scale vertical axis used when it was recorded.

% Full Scale - When enabled, the amplitude axis displays as a % value of the POINT's full scale value. Use **% Full Scale** to compare measurements that do not have the same units or the same Full Scale value.

- If you do not select **Autoscale** or **% Full Scale**, you must enter values to determine the plot's magnitude scale (Y-axis scaling).

Magnitude Scale - Enter the minimum and maximum magnitude scale values in the designated text boxes.

Magnitude Lin / Log - Select **Linear** scaling to space out data equally. Select **Logarithmic** scaling to emphasize lower values.

Date / Time scale fields include:

Date / Time Scale - Enter minimum and maximum date and time.

- With a plot displayed, to reset all settings back to their defaults, click the right-click context menu's "Reset Settings" option.

Adjust date/time range to include latest notes – When enabled, all notes created after the date / time of the last collected measurement display on the plot. Default is enabled.

Spectrum Plot

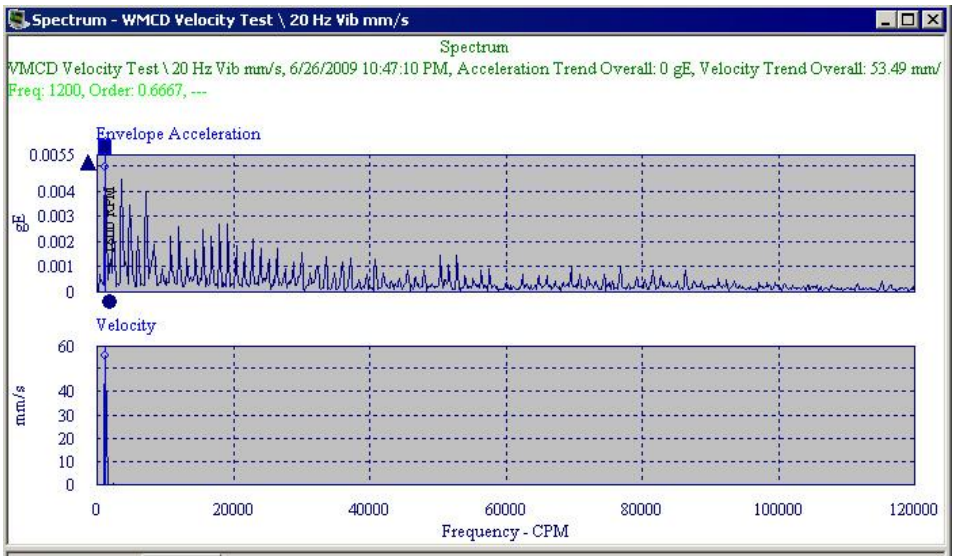


Figure 4 - 14.
Example of a Spectrum Plot.

As different types of machinery problems often occur at different frequencies, it is very useful to analyze measured vibration signals with respect to frequency.

FFT spectrum plots (pl. spectra) display vibration amplitudes at various component frequencies.

- FFT is the abbreviation for Fast Fourier Transform (the mathematical formula that transforms the vibration signal into its component frequencies).

In an FFT spectrum, the X axis (horizontal axis) represents vibration *frequency* in Hz or CPM (or orders of running speed). The Y axis (vertical axis) represents vibration *amplitude* (Enveloped Acceleration and Velocity). The top plot displays **Enveloped Acceleration** data. The bottom plot displays **Velocity** data.

FFT spectrum plots are extremely useful machinery analysis tools. FFT spectra provide information that helps determine the location of a problem, the cause of the problem, and with trending, how long until the problem becomes critical.

In addition to single display, you can display multiple POINTs' or measurements' FFT spectra (POINTs may be from the same machine or from different machines). This allows easy comparison between various POINTs' FFT spectra.

The cursor feedback area displays the overall values for both the Velocity and Enveloped Acceleration plots.

The active plot (Velocity or Enveloped Acceleration) determines the information window's content and overlay settings.

Spectrum Settings

To access the Spectrum Settings dialog:

- With a spectrum plot displayed, select the **View** menu's **Plot / Settings** option, or use the settings toolbar button.
  - The Settings dialog is also available from the spectrum plot's context menu.

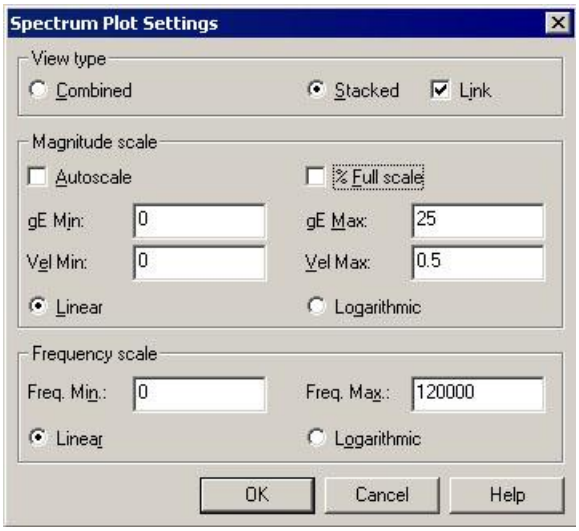


Figure 4 - 15.
Spectrum Plot Settings Window.

View Type fields include:

Stacked / Combined – Determine the plot orientation for the two measurements collected by a WMCD (velocity and enveloped acceleration) in a spectrum plot. **Stacked** displays each measurement as a separate plot. **Combined** shows a single plot overlaid with all measurements.

- It is recommended to always view WMCD FFT data using the **Stacked** view option.

Link - If **View Type** is set to **Stacked**, determine whether cursors and overlays are linked across all plots, or operate independently. If **Link** is enabled, cursors and overlays appear in the same position across all plots. If **Link** is disabled, you may add and move cursors and overlays in each plot independently.

Magnitude scale fields include:

Autoscale - Enable to automatically scale the initial amplitude axis so it is approximately 120% of the largest amplitude. Disable to display the spectrum on the same full scale vertical axis used when it was recorded.

% Full Scale - Enable to display the amplitude axis as a % value of the full scale. Use **% Full Scale** to compare measurements that do not have the same units or the same Full Scale value.

- If you do not select **Autoscale** or **% Full Scale**, you must enter values to determine the plot's magnitude scale (Y-axis scaling).

Magnitude Scale - Enter the minimum and maximum magnitude scale values in the designated text boxes.

Magnitude Lin / Log - Select **Linear** scaling to space out data equally. Select **Logarithmic** scaling to emphasize lower values.

You must enter values to determine the plot's frequency scale (X-axis scaling).

Frequency scale fields include:

Frequency Scale - Enter the minimum and maximum frequency scale values in the designated text boxes.

Frequency Lin / Log - Select **Linear** scaling to space out data equally. Select **Logarithmic** scaling to emphasize lower values.

- With a plot displayed, to reset all settings back to their defaults, click the right-click context menu's **Reset Settings** option.
- speed point is used, the speed point's live data is saved as well.

Working with Overlays

Plot "overlays" superimpose cursors, alarms, and frequency markers on displayed plots. Each overlay displays an "anchor" which you use to manipulate the overlay.

Displaying Overlays Using Toolbar Buttons

@ptitude Inspector has toolbar buttons for commonly used overlays.

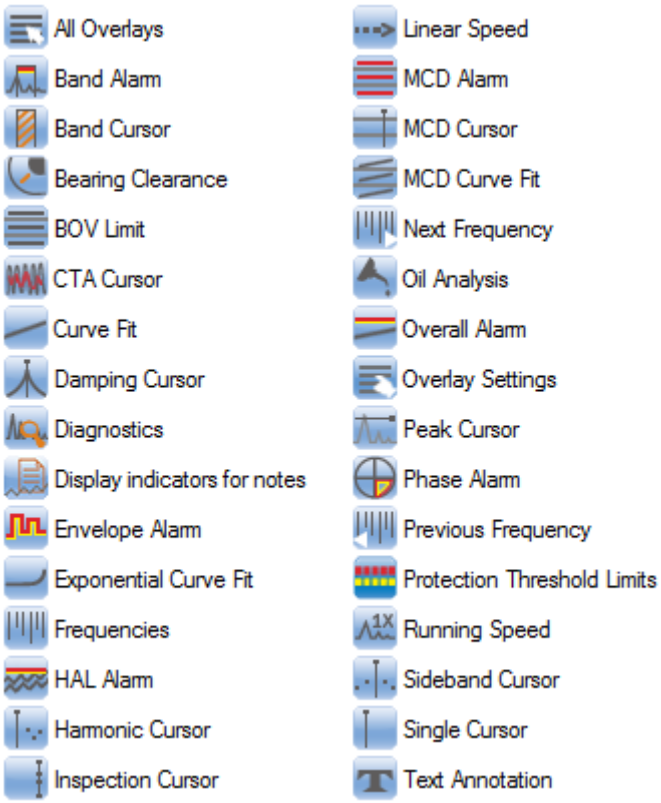


Figure 4 - 16.
Overlay Toolbar Buttons (Shown Here as Two Columns).

Toolbar buttons are available for each overlay. The buttons on the toolbar can be configured using the **Customize** menu's **Toolbar** option. For more information on customizing toolbars, refer to **Appendix B, SKF @ptitude Inspector Toolbars**.

Each button is enabled / disabled based on whether the overlay can appear on the active plot. Individual toolbar buttons are identified later in this section.

Displaying Overlays Using the View Menu

The **View** menu's **Plot Overlays** option contains a list of commonly used overlays. Individual items on this list are enabled or disabled based on whether the overlay is available for the plot window displayed when the item is selected.

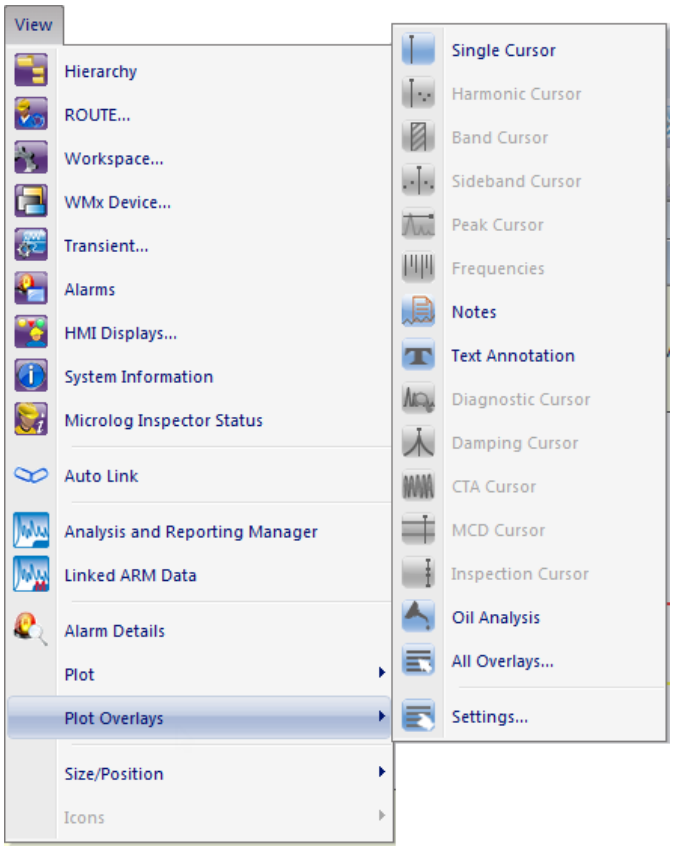


Figure 4 - 17.
The **View** Menu's **Plot Overlays** Option.

Using the View menu's Overlay option:

Select the **View** menu's **Plot Overlay** option. A group of commonly used overlay types displays on the menu.

- Select one of the visible overlay types, or select **All Overlays** for more selections.

  You may also use the **All Overlays** toolbar button to display the **All Overlays** dialog.

All Overlays

- Select the **View** menu's **All Overlays** option. The **All Overlays** dialog displays.

All overlays applicable to the open plot display in the dialog.

- Select an overlay to display and click **OK**. The selected overlay displays in the plot window.

  ➢ You may add as many instances of overlays as needed (excluding the peak cursor).

- Click **Cancel** to undo your selection.

Overlay Settings

To access the **Settings** dialog for the selected overlay, either click the toolbar's overlay settings button, or use the **View** menu's **Plot Overlays** / **Settings** option.

Overlay Types

Individual Overlay types and settings are listed below:

Inspection Cursor

Use an inspection cursor to view individual measurement data on the inspection plot by moving the cursor to various measurement values.

To display an inspection cursor:

- With an inspection plot displayed, select the **View** menu's **Plot / Plot Overlays / Inspection Cursor** option, or use the inspection cursor overlay toolbar button.
- Drag the cursor to position it on the plot.

Feedback Area - Displays observed results and date / time information.

Information Area - Specific information displays on the **Inspection** tab. Displays the POINT on which the cursor is currently positioned, cursor color, date / time, operator name, and inspection result.

Right-Click Context Menu - Right-click on the inspection cursor overlay anchor to reveal its context menu.

Available options include:

Next trace – Toggles between traces when the plot is displaying more than one trace.

Remove – Removes overlay from plot.

Keyboard Support – Move the cursor with the left and right arrow keys. Press **Enter** to toggle to next trace. Press **Delete** to remove the cursor.

Available Preferences

Color - Cursor is the color of the next available cursor (as configured in **Cursor / Color Preferences** in the **Preferences** dialog).

Display Status – Display status (on or off) is configured in the **Inspection Cursor / Plot Preferences** in the **Preferences** dialog.

- The default status is on.

MCD Alarm Overlay

Use an MCD alarm overlay to display MCD alarm levels on the plot.

Context Menu - Right click to reveal the context menu. Available operations are:

Next Trace - Toggles between traces when the plot is displaying more than one trace.

Remove - Removes overlay from the plot.

Keyboard Support - Press **Enter** to toggle to next POINT. Press **Delete** to remove.

Feedback - Displays POINT name and MCD alarm.

Information Area - Specific information displays on the **MCD Alarm** tab. Tab information includes alarm name, acceleration danger high value, acceleration alert high value, velocity danger high value, velocity alert high value, temperature danger high value, and temperature alert high value.

Available Preferences

Color - Alarm colors configured in **Danger** and **Alert / Colors** in the **Preferences** dialog.

Display Status - Display status (on or off) is configured in the **MCD Alarm – MCD Plot / Plot Preferences** in the **Preferences** dialog.

- The default status is on.
- MCD Alarm overlay is not available when the Plot Preferences' **MCD Layout** option is set to **Combined**.

MCD Curve Fit Overlay

Use an MCD curve fit overlay to project the linear direction a trend is heading based on current data.

Context Menu - Right click to reveal the context menu. Available operations are:

Next Trace - Toggles between traces when the plot is displaying more than one trace.

Remove - Removes overlay from the plot.

Keyboard Support - Press **Enter** to toggle to next trace. Press **Delete** to remove.

Feedback Area - Identifies curve fit and associated POINT.

Information Area – Specific information displays on the **MCD Curve Fit** tab. Information is sorted by POINT name or color of current trace. Tab information includes the following for each of the MCD **Acceleration**, **Velocity**, and **Temperature** measurements:

Date, time, and amplitude for 2 years from last plotted measurement.

Date, time, and amplitude when alert exceeded (or projected to be reached).

Date, time, and amplitude when danger exceeded (or projected to be reached).

Available Preferences

Color - Color appears as configured in **Curve Fit / Color Preferences** in the **Preferences** dialog.

Display Status - Display status (on or off) is configured in the **MCD Curve Fit / Plot Preferences** in the **Preferences** dialog.

- The default status is off.

- MCD Curve Fit overlay is not available when the Plot Preferences' **MCD Layout** option is set to **Combined**.

MCD Cursor Overlay

Use an MCD cursor overlay to view individual measurement values on the MCD plot.

Context Menu - Using your mouse, right click when the cursor is selected to reveal the context menu. Available operations are:

Next trace - Toggles between traces when the plot is displaying more than one trace.

Remove - Removes overlay from plot.

Exclude Reading - Toggles selected measurement's **Exclude** status on and off. When **Exclude** is selected, the measurement is excluded from all calculations. This setting is stored with the measurement and is in effect until the setting is changed.

Keyboard Support - Move the cursor with the left and right arrow keys. Press **Enter** to toggle to next trace. Press **Delete** to remove the cursor.

Feedback Area - Displays amplitude and date / time information.

Information Area - Specific information displays on the **MCD Cursor** tab. Tab information includes the POINT the cursor is currently positioned on, cursor color, acceleration / velocity / temperature values, and date / time.

Available Preferences

Color - Cursor is the color of the next available cursor (as configured in **Cursor / Color Preferences** in the **Preferences** dialog).

Display Status - Display status (on or off) is configured in the **MCD Cursor / Plot Preferences** in the **Preferences** dialog.

- The default status is on.

Text Annotation

Use text annotation overlays to create temporary textual notations and display on a plot.

- Text annotations are for temporary use. They are not attached to the measurement or stored in the database. They remain on a plot until the plot is closed.

To create a text annotation:

- With a plot displayed, click the toolbar's text annotation button, or select the **View** menu's **Plot Overlays / Text Annotation** option. The "Text Annotation" displays on the plot.

To edit the text annotation:

- Double-click the text annotation. The **Text Annotation Settings** dialog displays.

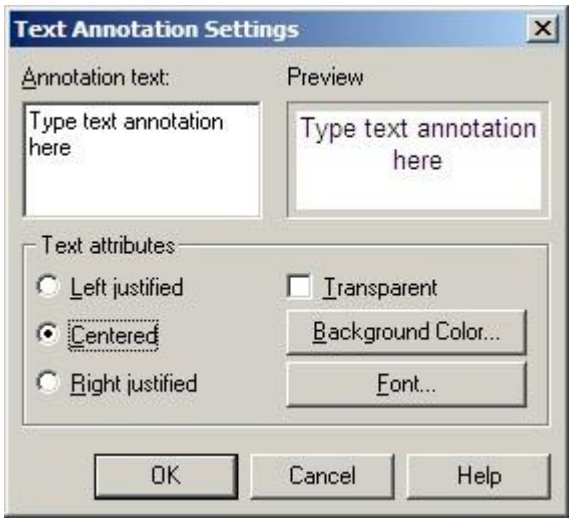


Figure 4 - 18.
The **Text Annotation Settings** Dialog.

Annotation text - Enter text to display on the plot. The entered text displays in the dialog's **Preview** area, allowing you to view the entered text before displaying it on the plot.

Text attributes options include:

Left justified, Centered, or **Right justified -** Determine how the text displays in its text box.

Transparent - Enable to make the annotation's background area transparent, allowing you to see the plot beneath the text.

Background Color - Click to select the annotation's background area color.

Font - Click to select the font for the annotation text.

- Click the **OK** button. The entered text annotation displays on the active plot.

Context Menu - Right-click on the displayed text annotation to reveal its context menu. Available operations are:

Remove – Removes the annotation from the plot.

Settings – Launches **Text Annotation Settings** dialog.

Keyboard Support – Press **Delete** to remove the annotation from the plot. Use up / down / left / right arrow keys to re-position. Use **Shift** and the left or right arrow key to enlarge in the direction of the selected arrow. Use **Ctrl** and the up / down / left / right arrow keys to shrink the box from the direction of the selected arrow.

Feedback Area – Displays the annotation text.

Information Area – None.

Available Preferences

None.

- Text annotation may also be moved with the mouse (drag and drop). Click on an anchor area and drag to re-size.

Trend / Notes

Use the notes overlay to create and display notes at a specific date / time on the trend plot.

To create a note:

- With a trend plot displayed, position your cursor over the plot area and right click to display the right-click context menu.
- Select **Add Notes**. The **Add Notes** dialog displays. A new note displays in the **Notes** list with the date and time of the location you right-clicked on the plot.

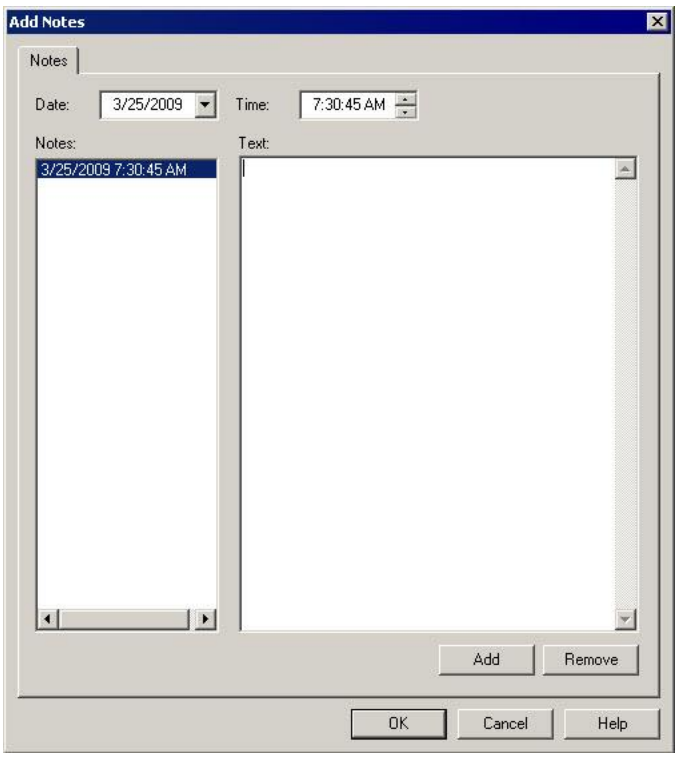


Figure 4 - 19.
The **Add Notes** Dialog.

- If you need to change the date / time of the note, use the **Date** and **Time** fields to adjust the date / time as necessary. The **Add** / **Remove** buttons will change to **Save** / **Undo** buttons. Click **Save** and the note's date / time adjusts accordingly in the **Notes** list.
- Type your note in the **Text** area and click **Save**.
- Click **OK**. The created note displays on the plot at its specified date / time location.

To create additional notes:

- Click the **Add** button. A new note is added to the **Notes** list with the current date / time stamp.
- Adjust the date / time using the **Date** and **Time** fields as necessary.
- Type your note in the **Text** area and click **Save**.

- Click **OK**. The created note displays on the plot at its specified date / time location.

To remove a note:

- Select the note you wish to remove in the **Notes** list.
- Click the **Remove** button. You will be asked to confirm that you wish to remove the note.
- Click **Yes**, or if you do not wish to remove the note, click **No**.

How Notes Overlays Display on the Plot

Feedback Area - Displays note and date / time information.

Information Area – Specific information displays on the **Notes** tab. Tab information includes the POINT on which the cursor is currently positioned, note, and date / time.

Context Menu - Right-click on the displayed note to reveal its context menu. Available operations are:

Remove – Removes overlay from the plot.

- This does not delete existing notes. To display the notes overlay again, select **View** / **Plot Overlays** / **Notes**.

Next Trace – Toggles between traces when the plot is displaying more than one trace.

Display Note – Displays the note on the plot.

Remove All Display Notes – Hides all notes displayed on the plot.

Filter Notes – Allows you to select one or more note categories to display on the plot.

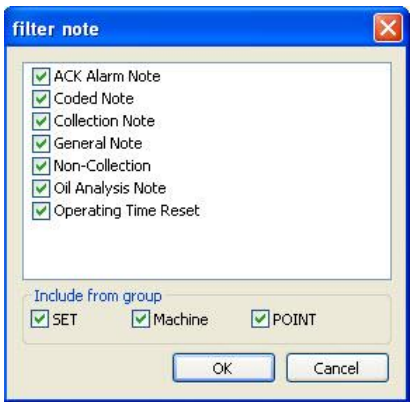


Figure 4 - 20.
The **Filter Notes** Dialog.

- From the list of note categories, enable the check box next to one or more note categories.
- In the **Include from group** area, select the check boxes to include notes from SETs, Machines, and / or POINTs.
- Click **OK**. Only notes from the selected note categories display on the plot.

Available Preferences

The following preferences are found on the **Preferences** dialog's **Plot** tab**.**

Notes – Configure the default display status (on or off).

Notes Indicator Location – Configure the display notes indicator (at top or bottom of plot).

Notes Indicator Tooltip – Configure whether to display the tooltip (on or off) when hovering over the notes indicator.

Notes Line Style – Configure how the notes cursor line displays (dashed, solid, etc.).

Trend / Single Cursor

Use a single cursor to view individual measurement data on the trend plot by moving the cursor to various measurement records.

To display a single cursor:

- With a trend plot displayed, select the **View** menu's **Plot / Plot Overlays / Single Cursor** option, or use the single cursor overlay toolbar button.
- Drag the cursor to position it on the plot.
- If multiple traces appear in a plot, double-click the cursor overlay's anchor to position it on another trace. The anchor's color indicates the current trace.

Feedback Area - Displays amplitude and date / time information.

Information Area – Specific information displays on the **Trend** tab. Tab information includes the POINT on which the cursor is currently positioned, cursor color, amplitude, and date / time.

Right-Click Context Menu - Right-click on the single cursor overlay anchor to reveal its context menu.

Available options include:

Next trace – Toggles between traces when the plot is displaying more than one trace.

Remove – Removes overlay from plot.

Exclude Reading – Toggles selected measurement's **Exclude** status on and off. When **Exclude** is selected, the measurement is excluded from all calculations. This setting is stored with the measurement and is in effect until the setting is changed.

Keyboard Support – Move the cursor with the left and right arrow keys. Press **Enter** to toggle to next trace. Press **Delete** to remove the cursor.

Available Preferences

Color - Cursor is the color of the next available cursor (as configured in **Cursor / Color Preferences** in the **Preferences** dialog).

Display Status – Display status (on or off) is configured in the **Trend Single Cursor / Plot Preferences** in the **Preferences** dialog.

- The default status is on.

Trend / Overall Alarm

Use an overall alarm overlay to display your overall alarms graphically (as configured in **POINT Properties)** on the active trend plot.

To display an overall alarm overlay:

- With a trend plot displayed, select the **View** menu's **Plot / Plot Overlays / All Overlays** option. The **All Overlays** dialog displays.
- Select **Overall Alarm** and click **OK**.

Feedback Area - Identifies the POINT, displays private alarm or alarm name (if shared), and the alarm levels set.

Information Area - Specific information displays on the **Overall Alarm** tab. Tab information includes POINT name, type, alarm level values and alarm message summaries.

Overall Alarm tab - Information includes name, type, and alarm level values.

Right-Click Context Menu - Right-click on the overall alarm overlay anchor to reveal its context menu.

Available options include:

> **Next trace** – Toggles between traces when the plot is displaying more than one trace.
>
> **Remove** – Removes overlay from plot.

Keyboard Support – Press **Enter** to toggle to next trace. Press **Delete** to remove.

Available Preferences

> **Color –** Alert and Danger colors appear as configured in **Cursor / Color Preferences** in the **Preferences** dialog.
>
> **Display Status –** Display status (on or off) is configured in the **Trend Overall Alarm / Plot Preferences** in the **Preferences** dialog.
>
> - The default status is on.

Trend / Curve Fit

Use a curve fit overlay to graphically display the projected linear direction a trend is heading based on current data

To display a curve fit overlay:

- With a trend plot displayed, select the **View** menu's **Plot / Plot Overlays / Curve Fit** option, or use the curve fit toolbar button.

Feedback Area - Identifies the curve fit and associated POINT.

Information Area - Specific information displays on the **Curve Fit** tab. Tab information includes:

> Date, time, and amplitude for 2 years from last plotted measurement.
>
> Date, time, and amplitude when alert exceeded (or projected to be reached).

Date, time, and amplitude when danger exceeded (or projected to be reached).

Information is sorted by the POINT name or color of the current trace.

Right-Click Context Menu - Right-click on the curve fit overlay anchor to reveal its context menu.

Available options include:

Next trace – Toggles between traces when the plot is displaying more than one trace.

Remove – Removes overlay from the plot.

Keyboard Support – Press **Enter** to toggle to next trace. Press **Delete** to remove.

Available Preferences

Color – Color appears as configured in **Curve Fit / Color Preferences** in the **Preferences** dialog.

Display Status – Display status (on or off) is configured in the **Trend Curve Fit / Plot Preferences** in the **Preferences** dialog.

- The default status is off.

WMCD Spectrum / Single Cursor

Use a single cursor on a spectrum plot to display the amplitude for the frequency of the cursor's current placement

To display a single cursor overlay:

- With a spectrum plot displayed, select the **View** menu's **Plot / Plot Overlays / Single Cursor** option, or use the single cursor toolbar button.

Feedback Area - Displays amplitude, frequency, and number of orders.

Information Area - Specific information displays on the **Spectrum** tab. Tab information includes POINT name, cursor color, frequency, amplitude of each measurement (velocity and enveloped acceleration), and number of orders.

Right-Click Context Menu - Right-click on the single cursor overlay anchor to reveal its context menu. Available options include:

Next trace – Toggles between traces when the plot is displaying more than one trace.

Remove – Removes overlay from the plot.

Set Speed – Launches the **Set Running Speed** dialog.

Keyboard Support – Press **Enter** to toggle to next trace. Press **Delete** to remove. Left and right arrow keys move one line at a time. **Shift** and the left or right arrow moves 15 lines at a time.

Available Preferences

Color - Cursor is the color of the next available cursor (as configured in **Cursor / Color Preferences** in the **Preferences** dialog).

Display Status – Display status (on or off) is configured in the **Spectrum Single Cursor / Plot Preferences** in the **Preferences** dialog.

- The default status is on.

Set Running Speed

The calculated or custom running speed appears on the active plot if the running speed overlay is displayed.

To specify the running speed:

- Right click on the single cursor overlay and select **Set Speed** from the pop-up menu.

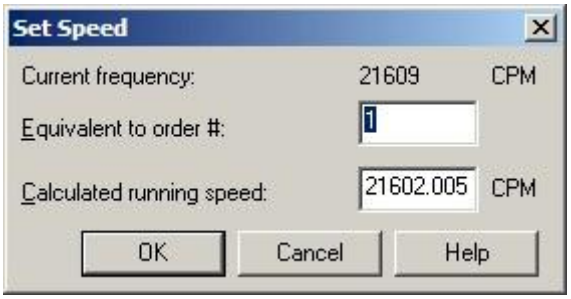


Figure 4 - 21.
The **Set Speed** Dialog.

Use the **Set Running Speed** dialog to edit the running speed for the measurement.

Current frequency – Displays the frequency of the current cursor position on the open plot.

To set a custom running speed:

- Enter the desired frequency in the **Calculated running speed** field and click **OK.**

To automatically calculate running speed by current frequency and number of orders:

- Enter the desired value in the **Equivalent to order#** field.
- Click **OK.**

WMCD Spectrum / Harmonic Cursor

Use a harmonic cursor to display multiples of the current frequency.

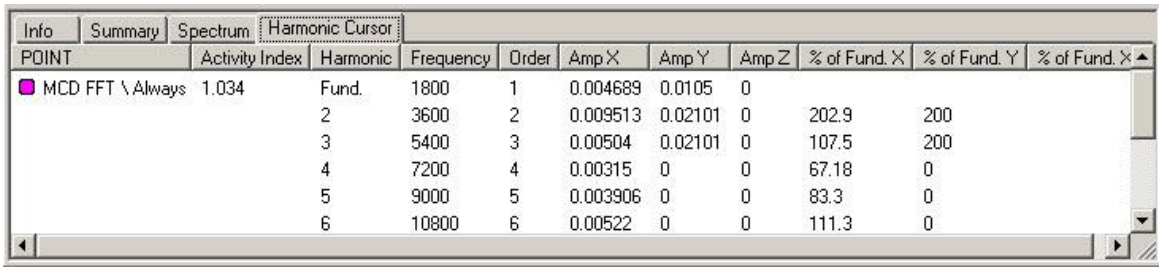
To display a harmonic cursor overlay:

- With a spectrum plot displayed, select the **View** menu's **Plot / Plot Overlays / Harmonic Cursor** option, or use the harmonic cursor toolbar button.

Feedback Area – Displays the value for fundamental and harmonic amplitude, frequency, and orders. When the mouse pointer is positioned over a harmonic marker, that marker's amplitude, frequency, and orders display on the feedback area's second line.

Information Area – Specific information displays on the **Harmonic Cursor** tab. Tab information includes POINT name, cursor color, frequency, amplitude of each

measurement (velocity and enveloped acceleration), number of orders, and percentage of each measurement's fundamental frequency for each harmonic.



POINT	Activity Index	Harmonic	Frequency	Order	Amp X	Amp Y	Amp Z	% of Fund. X	% of Fund. Y	% of Fund. X
MCD FFT \ Always	1.034	Fund.	1800	1	0.004689	0.0105	0			
		2	3600	2	0.009513	0.02101	0	202.9	200	
		3	5400	3	0.00504	0.02101	0	107.5	200	
		4	7200	4	0.00315	0	0	67.18	0	
		5	9000	5	0.003906	0	0	83.3	0	
		6	10800	6	0.00522	0	0	111.3	0	

Figure 4 - 22.
The **Harmonic Cursor** Tab.

The **Harmonic Cursor** tab provides details on potential harmonics using SKF's Harmonic Activity Index (HAI). All impact defects create spectra with a fundamental and a series of harmonics (i.e., a harmonic pattern). The amplitudes of these harmonics are affected by the defect itself, as well as the filtering effect of the machine. HAI is a calculation that quantifies the likelihood of harmonic patterns being present in a spectrum, and therefore, the likelihood of a defect being present.

The result of the HAI calculation is displayed in the **Activity Index** column. The **Activity Index** is a quick indicator to determine if there is a meaningful pattern under the current cursor position (i.e., whether or not there is a defect associated with this frequency). It can also act as a guide to determine the best cursor position for a suspected a harmonic pattern.

An HAI value of 2.5 or greater indicates a likely defect pattern; HAI values of 3 or more show clear patterns.

- HAI values are the same across spectra from different sources (i.e., the number of lines or unit types do not matter).
- HAI values are calculated from spectral data only. In some spectra, many different sources unrelated to each other may create a seemingly harmonious pattern. The HAI value for this pattern might be high enough to suggest a true pattern is shown. To verify it is a true pattern, always check a few spectra taken over time for similar HAI values.

Right-Click Context Menu - Right-click on the harmonic cursor overlay anchor to reveal its context menu. Available options include:

Next trace – Toggles between traces when the plot is displaying more than one trace.

Remove – Removes the overlay from the plot.

Keyboard Support – Press **Enter** to toggle to the next trace. Press **Delete** to remove.

Left and right arrow keys move the fundamental line in small increments (one line at a time). Use the **Shift** and the left or right arrow key to move in larger increments (15 lines at a time).

Ctrl and the left or right arrow key moves the marker on the far right in small increments.

Available Preferences

Color - Cursor is the color of the next available cursor (as configured in **Color Preferences** in the **Preferences** dialog).

Display Status – Display status (on or off) is configured in the **Harmonic Cursor / Plot Preferences** in the **Preferences** dialog.

- The default status is off.

Number of Harmonics – Maximum number of harmonic markers displayed (1-100).

- The default number is 50.

5
Generating and Printing SKF @ptitude Inspector Reports

Overview

- The **File** menu's **Print** option or the toolbar's **Print** button may be used at any time to print the contents of the "active" @ptitude Inspector window (including graphic display windows).
- Microsoft Internet Explorer version 4.X or newer is required to view reports.

@ptitude Inspector's **Reports** feature provides options for controlling the generation and printing of hard copy reports showing database and measurement information.

Collection Status – Produces a report of set ROUTE activity dates and the status of each POINT. POINT status includes **Collected**, **Missed**, and **Not Collected**.

Exception - Produces a report of POINTs in violation of specified exception criteria.

History - Produces a report of machine notes.

Last Measurement - Reports POINTs' last measurement values.

Inspection – Produces a report for open or selected inspection POINTs in the hierarchy list.

Overdue / Non-Compliant- Produces a report of all POINTs that are overdue for measurement.

Pending Overdue/Non-Compliant – Produces a report of all POINTs that are pending overdue. Default is seven days.

ROUTE Statistics - Produces a report of statistics for one or more ROUTEs. Statistics include when due, last downloaded, total number of POINTs in the ROUTE.

ROUTE History Report - Produces a report of ROUTE history for the selected ROUTEs. ROUTE History reports include ROUTE collection time duration, start and stop times, and operator ID (structured ROUTEs only). The amount of reported ROUTE historical information is determined using the **ROUTE Properties / General** tab.

SET Statistics - Produces a report of statistics for the selected data source. The statistics include total number of POINTs, POINTs in alarm, POINTs disabled, and POINTs overdue.

Upload Statistics – Produces a report of the statistics for information last uploaded from the DAD.

➢ Each of @ptitude Inspector's report types may be customized. Report setup is discussed later in this chapter.

Reports Dialog

- Select the **File** menu's **Reports** option. The **Reports** dialog displays.

The **Reports** dialog allows you to select, configure, manage, and generate reports. Each report type is available for use and may also be used as a starting point to customize reports to fit your particular application.

➢ Reports may also be generated automatically using the **Scheduler** feature. Refer to **Chapter 3, Working With Your SKF @ptitude Inspector Database** for more information on scheduling automatic reports.

Use the **Reports** dialog to work with existing reports and to create new report templates. The top area provides options for new and current reports. The bottom area provides options for preserved (archived) reports.

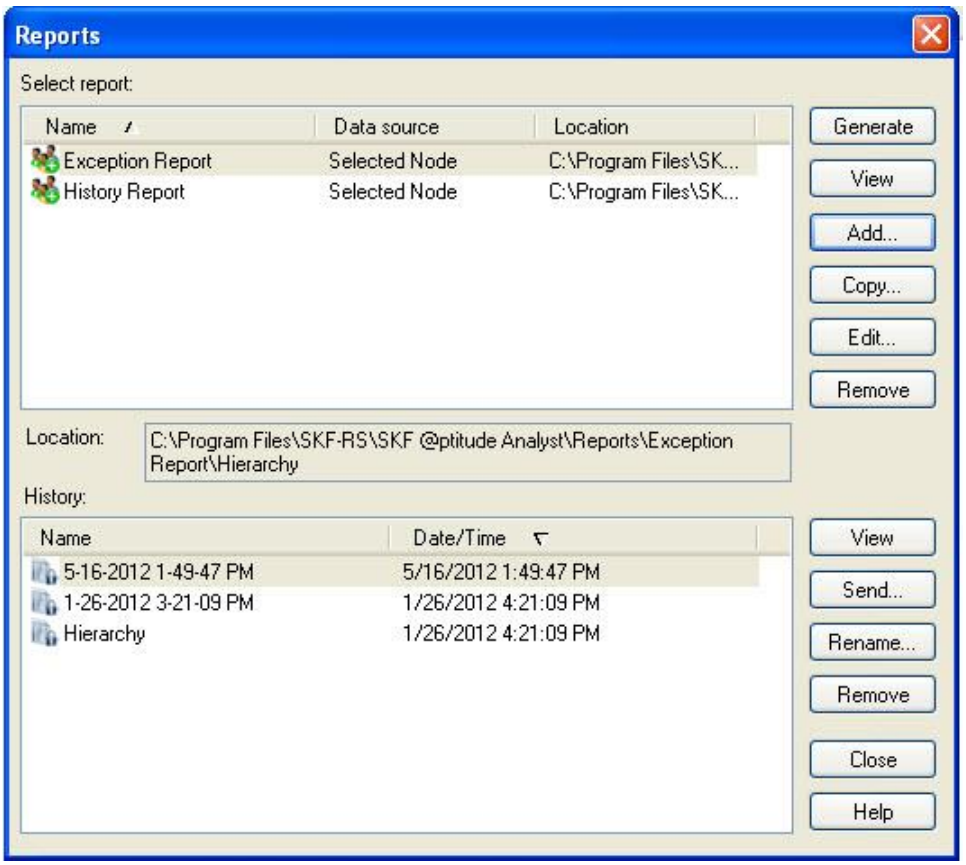


Figure 5 - 1.
The **Reports** Dialog.

Select report area - Displays all existing report definitions.

- Click a report's name to select it.

Reports options include:

Generate – Generates a report to the computer display based on the selected report definition.

View – Displays the latest generated version of the selected report.

Add – Defines a new report based on a pre-defined @ptitude Inspector template.

Copy – Defines a new report using the selected custom report as a template.

Edit – Launches the **Report Editor** dialog to edit the selected report.

Remove – Deletes the selected report. When you delete a report from the dialog's top area, you are asked if you also want to delete all preserved historical reports for the selected report definition.

> ➢ When a report is removed, its corresponding subdirectory and all included files are also removed from your computer's hard drive. If you wish to delete a report, but save previous copies, copy the report's files from its subdirectory to a new location on your hard drive before removing the report.

History area – Displays all existing preserved reports for the selected report definition.

> ➢ Refer to the **Report Editor / General** section later in this chapter for more information on preserving historical reports.

- Click a preserved report's name to select it.

View - Displays the preserved version of the selected report, identified by its date and time.

Send – Launches the **Recipient Selection** dialog and allows you to send the report in an email message to one or more selected contacts or groups of contacts. The report is sent in HTML and PDF format to the selected email recipients.

> ➢ Refer to the **SKF @ptitude Analyst Introduction and Global Features User Manual, Chapter 2, Getting Around in @ptitude Analyst / Contact Information** section for details on how to set up contacts and groups.

Rename – Allows you to rename the selected preserved report. The **Enter Name** dialog displays, prompting you to enter the new report name. Click **OK** to rename the selected report.

Remove – Removes the selected preserved report.

Close – Closes the dialog.

To generate a @ptitude Inspector Report:

- Open the Hierarchy window whose data you wish to report. If necessary, open or select hierarchy items within the window to limit the report's content.
- Select the **File** menu's **Reports** option. The **Reports** dialog displays.

- Select a report from the **Reports** dialog's **Select report** area.
- Click the **Generate** button. The report is rendered and when complete, displays in a report window for viewing or printing.
    - Report generation progress displays in the progress bar in the screen's lower right corner.
    - When setting up a report, there is an option to select the data source at the time the report is generated. If this has been selected, the **Select Data Source** dialog displays. Refer to the *Selecting the Data Source* heading, later in this chapter, for details.
- Press your keyboard's **End** key to go to the end of the report.
- Press your keyboard's **Home** key to go to the top of the report.

To print a generated report:

- With the generated report on the computer's display, use the **Print** toolbar button or select the **File** menu's **Print** option.

To view an existing report:

- In the **Reports** dialog, select the desired report.
- Click the **View** button. The report displays in a **Report** window and is available for viewing and/or printing.

Use the **Reports** dialog to "add" a customized report type. Customized reports are based on pre-defined report types, then modified to suit your particular application. Once your new report type is defined, it is available for selection from the **Reports** dialog, and may be generated as needed.

To add a new report:

- Click the **Report** dialog's **Add** button. The **Select Report Template** dialog displays.

The **Select Report Template** dialog displays all pre-defined @ptitude Inspector report templates. These templates may be used to generate reports without further modification, or as a starting point for creating custom reports.

- Select the template to use as a basis for your new report.
    - If you wish to use the selected report "as is," (no modifications are required) assign the report a unique name, verify the path settings, and click the **OK** button to accept all default settings.
- Click **OK**. The **Report Editor** dialog displays.

Report Editor

The **Report Editor** dialog contains three tabs:

General – Defines the new report's identity and processing parameters.

Definition – Defines the new report's criteria, criteria settings, and content.

Assign – Allows you to configure default report configurations for both public and hierarchy-specific reports.

Report Editor / General

Report Editor / General tab fields include:

Name – Using standard file naming conventions, assign the new report a unique name. Do not use the pound sign (#) in your report name as it can cause errors when printing. The assigned name identifies the most recently generated report and is used to name the disk directory (folder) where the report and all its supporting files are stored. If you maintain historical reports, a separate directory is created beneath the report's directory identified by the historical report's name.

- If you change a report's name, all data for the previously generated report remains in the subdirectory with the original report's name.

Title – Enter a descriptive title for the report. This text appears at the top of the generated report.

Header – Enter text to display in the printed report's header area.

Footer – Enter text to display in the printed report's footer area.

Preserve Reports – Click to enable report preservation. When enabled, newly generated reports are archived, organized by report definition and date / time.

Report is Available for all users – Click to enable and define the report as a public report, available to all @ptitude Inspector users. If you do not check this option, the report is defined as a private report, available only to the report creator.

Report is Available for all hierarchies – Click to enable and make the report available for use with all @ptitude Inspector hierarchies. If you do not check this option, the report will only be available to the current hierarchy

Report can specify data sources from multiple hierarchies – Click to enable and make the report available for use with all @ptitude Analyst hierarchies, as well, as enable the ability to select multiple data sources from multiple hierarchies. If you do not check this option, the report will only be available using a single hierarchy source.

Report Editor / Definition

The **Report** Editor / Definition tab is divided into two main areas, the **Select report criteria** area in the dialog's left panel and the criteria setup panel on the right. Click an item to expand and view any sub-items available for configuration.

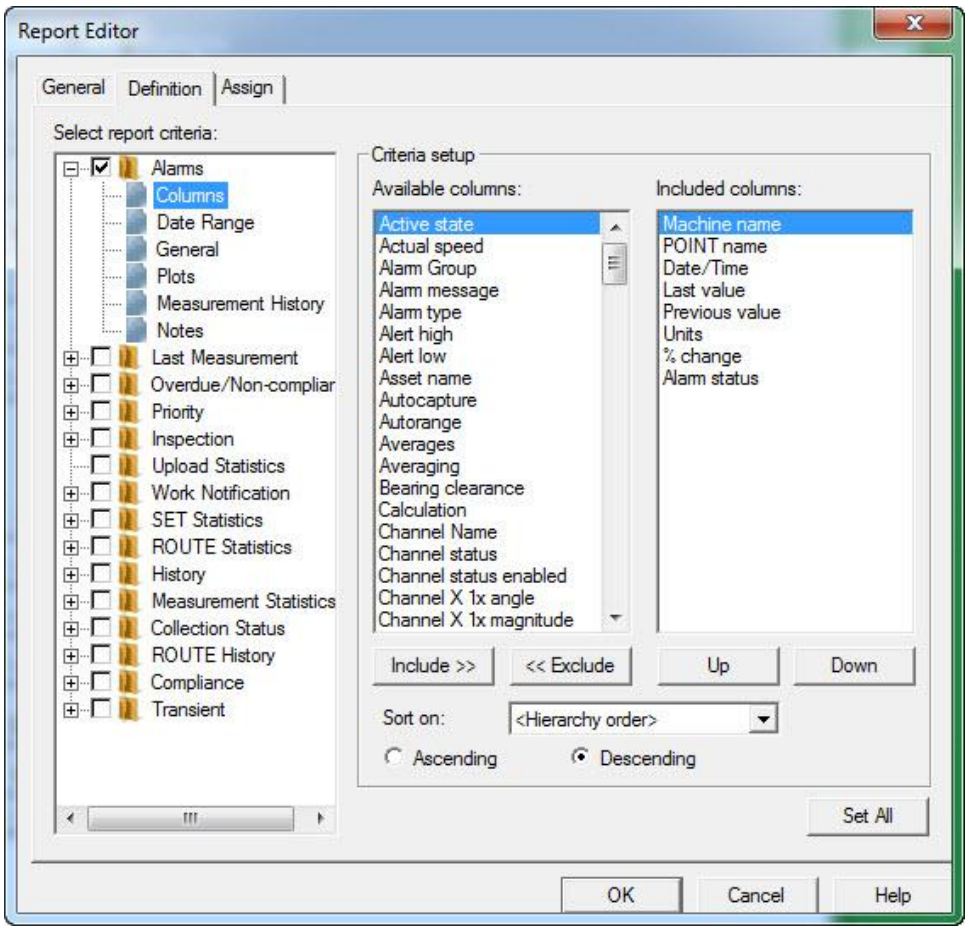


Figure 5 - 2.
The **Report Editor** / **Definition** Tab.

Select report criteria – Select attributes to appear in the report.

Criteria setup (contents change depending upon item selected in left panel) – Allows you to configure the selected report criteria to determine report content.

To select an element to include in the report:

- Highlight the item and click the item's checkbox to include it in your report. Once selected, the item's input fields (if any) display in the dialog's right panel. Available report elements are detailed in the **Report Criteria** section later in this chapter.
- Click the item's + icon to expand the item in the hierarchy list and view its additional configuration options.
- Click an additional configuration item to select it. When selected, the additional item's set up fields display in the **Criteria Setup** area, allowing you to further customize the report. Available setup fields are detailed in the **Criteria Setup Fields** section later in this chapter.

Report Criteria

The following items display in the **Select report criteria** area as top-level items.

Alarms - Select individual alarm conditions and types to include in the report**.**

Last Measurement - Select to include all POINTs in the report with a last measurement.

Overdue/Noncompliant – Specify the amount of overdue POINTs to include in the report.

Priority – Includes any Machine with a set priority matching your selection(s).

Inspection / Upload Statistics – Select one or more alarm conditions (Clear, In alert, In danger); select the columns, date range and type of notes to include. Check Upload Statistics to include a summary of the last data upload from the DAD.

Work Notification – Select to include all work notifications, a fixed number of them, or select a date or date range. Specific ROUTEs and work request statuses can be selected for the report.

SET Statistics – Select to include a summary of the hierarchy item and all its children.

ROUTE Statistics – Select to include a summary of ROUTE data collection status for each ROUTE included in the report.

History – Select to include all machine notes and images for any machine in the selected data source.

Measurement Statistics – Select to include a summary of statistical information for a selected measurement type (selected by the **Full Scale Units** setting) and alarm threshold (selected by the **Threshold Level** setting). This setting includes the average amplitude for last measurement data of the specified measurement type, and indicates all POINTs with an amplitude above the specified alarm threshold in the report.

Collection Status - Select to include a summary of the ROUTE activities and its POINTs' status. Include all collection activities, a fixed number of them, or select a date or date range. You can choose to show only missed or uncollected POINTs.

Route History – Specify the amount of historical ROUTE information to include in the report.

- The **Include records by comparing** options under **Route History** are only applicable to the date range settings. They further filter the range based on start time, end time, or both.

Compliance – Select ROUTEs on which you wish to report a summary of compliance status, and specify to report status for either the previous collection interval (previous compliance) or the current collection interval (current compliance). You may also specify to list all missed or out of compliance POINTs for the specified ROUTEs and to exclude interval-based POINTs.

Transient – Select to include transient data and specify the phase order (1 – 4).

Criteria Setup Fields (right panel setup fields)

Columns

Use the **Columns** input area to specify which columns appear in report tables, to specify column order, and select column sort criteria.

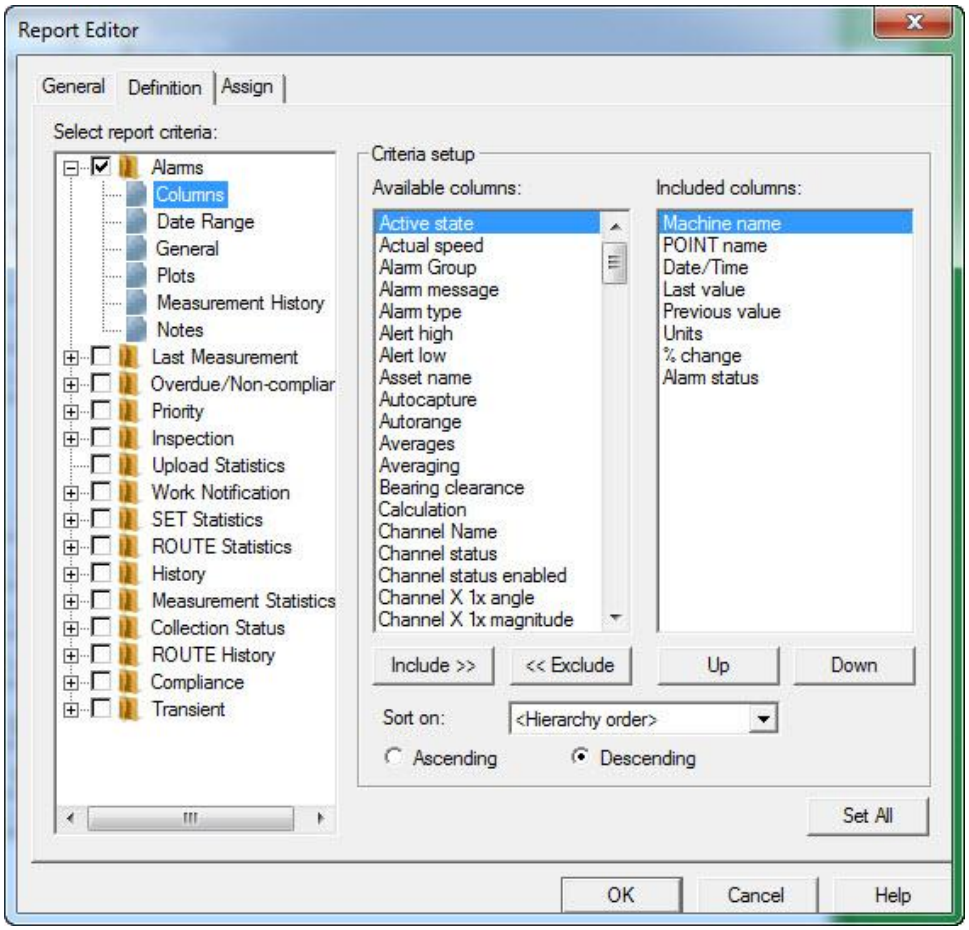


Figure 5 - 3.
The **Report Editor** / **Definition** Tab, Criteria Setup.

Available columns – Displays all available columns for the selected report element.

Included columns – Displays all included columns for the selected report element.

To include / exclude columns:

- Click the column type to select it.
- Use the Include / Exclude buttons to move the selected column to the **Included columns** area to include in the report, or move the selected column to the **Available columns** area to exclude it from the report.

To specify column order:

- Click the column type in the **Included columns** area.
- Use the **Up** and **Down** buttons to place the column into the desired position.

To specify sort criteria:

- Select a column type from the **Sort on** drop down list box.
- Click the desired sort method button, **Ascending** or **Descending**.
- Click the **Set All** button to use the current column settings for all matching column types in other report element setup fields. For example, the same column settings are available for various report elements. The **Set All** feature allows you to configure this information once and then use the same settings for all applicable report elements.
- Click **OK** to save changes, or **Cancel** to undo settings.

Date Range

Use the date range fields to specify a date interval. This date interval is used to retrieve only POINTs with a last measurement that falls within the indicated date interval.

Only include enabled POINTs – Select (check) to have the applicable report criterion retrieve data from enabled POINTs only. This checkbox can be selected or not selected (checked or not checked) by default and may or may not be editable depending on the selected report criterion.

- For **Alarms** and **Overdue/Non-compliant** criteria – This checkbox is selected (checked) by default and is read-only. Thus, these criteria will always retrieve data from enabled POINTs only for reporting.
- For **Last Measurement**, **Inspection**, and **Measurement Statistics** criteria – This checkbox is not selected (not checked) by default and is editable. Thus, by default these criteria will retrieve data from all POINTs for reporting, but you can select (check) this checkbox to have them retrieve data from enabled POINTs only.

No date range restriction – Select to remove date range restrictions.

Absolute date – Enter "absolute" (calendar) dates for date range restriction.

Relative date – Enter number of days (from / to) for date range restriction.

- Click the **Set All** button to use the current date range settings for all date range settings in other report element setup fields. The **Set All** feature allows you to configure this information once and then use the same settings for all applicable report elements.

General

Use the **General** fields to configure general report element information.

Include image – Click to enable and include any images associated with the selected report element.

Grouped by machine – Click to enable and display included report items grouped by machine.

Plots

Use the **Plots** fields to specify which plot types are to be included with the report table for the selected report item.

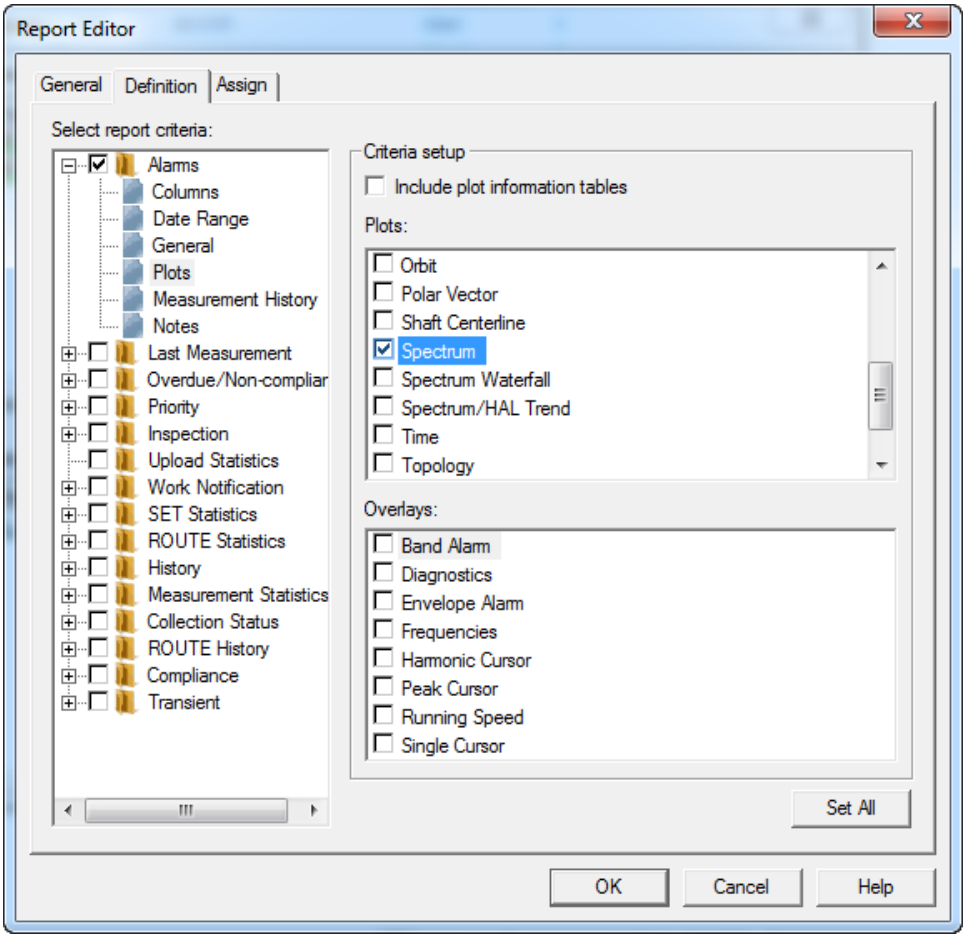


Figure 5 - 4.
The **Report Editor** / **Definition** Tab, Plots.

Include plot information tables – Click to enable and include plot content details and overlay information in table format on the report.

Plots area - Displays all available plots. Click a plot type to include it in the report.

- Selected plots are created only if there is associated data.

Overlays area – Displays overlays associated with the selected plot type (if applicable).

- Click the **Set All** button to use the current plot and overlay settings for all matching plot and overlay types in other report element setup fields. For example, the same plot settings are available for various report elements. The **Set All** feature allows you to configure this information once and then use the same settings for all applicable report elements.

Measurement History

Use the **Measurement History** fields to specify which measurements to include in the report.

Last fixed number of measurements – Select this option and type in or use the arrow buttons to specify the fixed number of measurements to include in the report.

Measurements in this date range – Select this option to include all measurements occurring between your entered date interval in the report. Type in a start date in the **From** field and an end date in the **To** field, or use the arrow buttons to display a pop-up calendar to select start and end dates.

Measurements from the last fixed number of days – Select this option to include measurements occurring within a specific number of days in the report. Type in or use the arrow buttons to specify the fixed number of days.

All measurements – Select this option to include all measurements in the report.

Notes

Use the **Notes** fields to specify which notes to include in the report.

Note Categories – Click to enable and include one or more note categories for the selected report item in the report. Note categories include **ACK Alarm Note**, **Coded Note**, **General Note**, **Non-Collection**, **Oil Analysis Note**, and **Operating Time Reset**.

Settings area – Use the settings area to define which notes to include in the report.

Last fixed number of notes – Select this option and type in or use the arrow buttons to specify the fixed number of notes to include in the report.

Notes in this date range – Select this option to include all notes occurring between your entered date interval in the report. Type in a start date in the **From** field and an end date in the **To** field, or use the arrow buttons to display a pop-up calendar to select start and end dates.

Notes from the last fixed number of days – Select this option to include notes occurring within a specific number of days in the report. Type in or use the arrow buttons to specify the fixed number of days.

All notes – Select this option to include all notes in the report.

Routes

Use the **ROUTEs** fields to specify which ROUTEs to include in the report.

Routes – All available ROUTEs display in the **ROUTEs** area. Click to select one or more ROUTE.

- Click **Check All** to select all available ROUTEs. Click **Clear All** to clear your selections.
- Click the **Set All** button to use the current ROUTE selections in other report element setup fields. The **Set All** feature allows you to configure this information once and then use the same settings for all applicable report elements.

Overdue Forecast

Use the **Overdue** fields to specify the number of days to use with projection and trending.

Absolute date in the future – Enter a future date to indicate when the POINT is considered overdue.

Number of days from today - Enter a number in the text field or use the up and down arrows to indicate the number of days from now for use with projection and trending.

Report Editor / Assign

Use the **Report Editor** dialog's **Assign** tab to configure default report settings, and to override defaults when the report is generated from the current hierarchy.

The **Assign** tab varies, depending on whether **Report is available for all hierarchies** or **Report can specify data sources from multiple hierarchies** is enabled on this dialog's **General** tab.

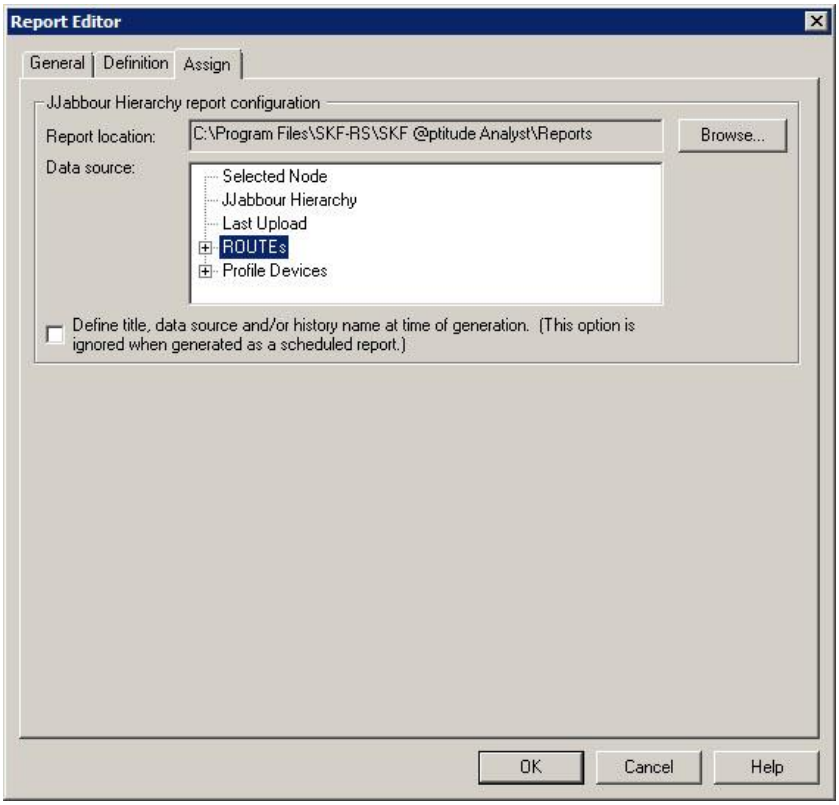


Figure 5 - 5
The **Report Editor** / **Assign** Tab with **Report is available for all hierarchies** Disabled.

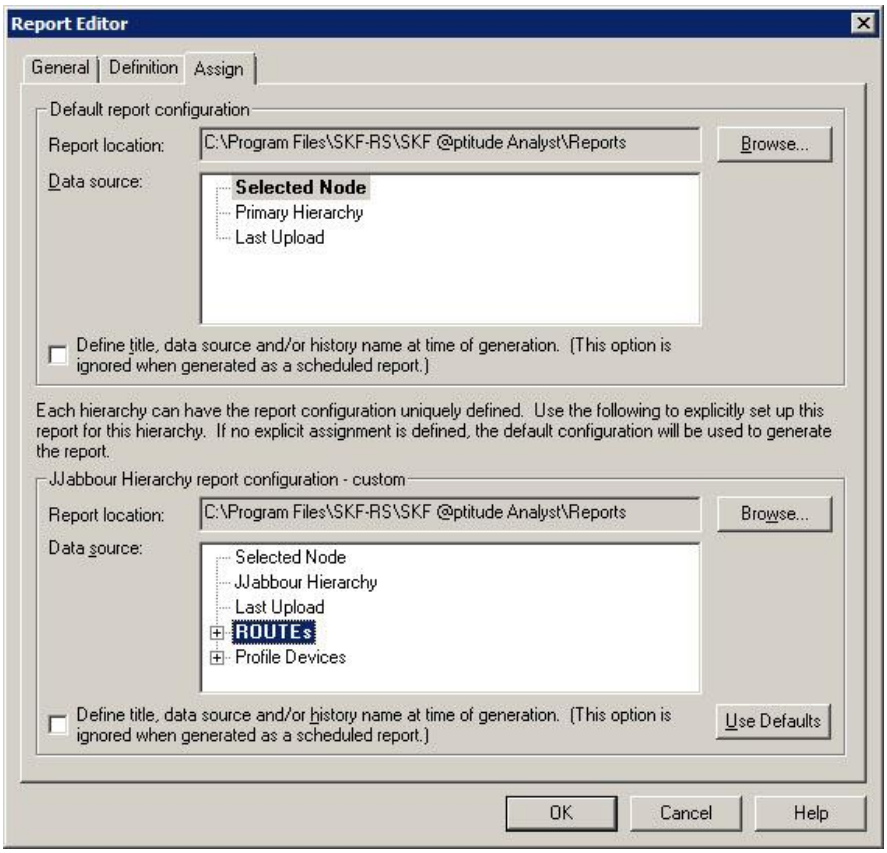


Figure 5 - 6.
The **Reports** / **Assign** Tab with **Report is available for all hierarchies** Enabled.

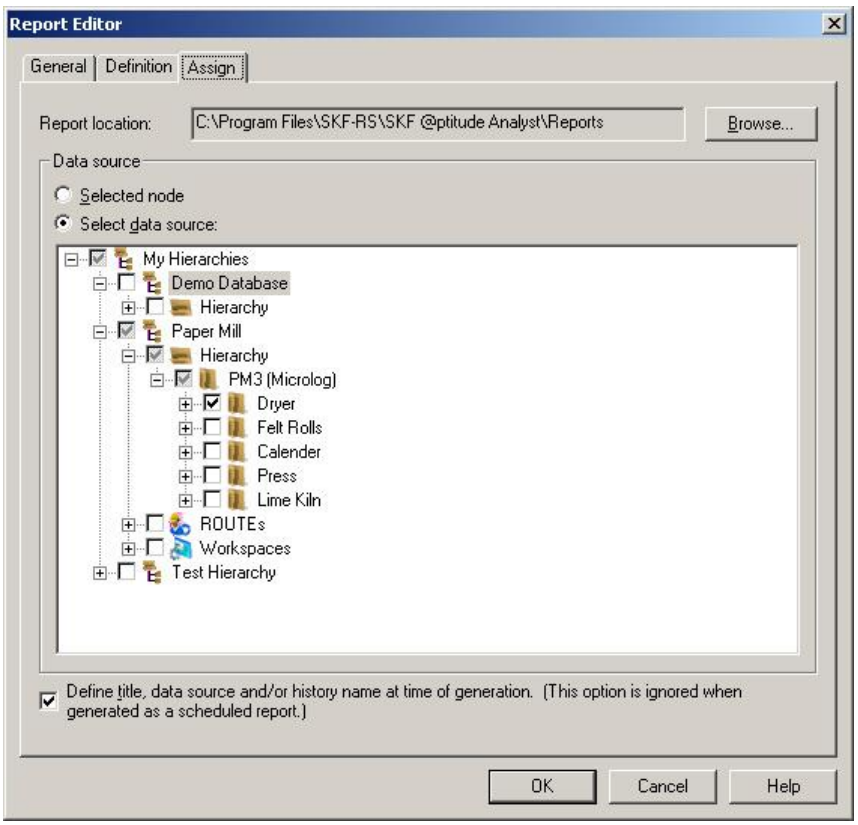


Figure 5 - 7
The **Report Editor** / **Assign** Tab with **Report can specify data sources from multiple hierarchies** Enabled.

The dialog provides fields to configure default report settings. Options include:

Report Location - Specify the path for the disk directory for report storage. The report is stored in a subdirectory (using the report's name) beneath this indicated directory. For example, specify **E:\SKF @ptitude Inspector\Reports** to place all reports in their unique directories branching from a "reports" directory.

- Click the **Browse** button to specify a new path.
    - ➢ Reports are stored in HTML format and are available for copying, moving, and sharing over intranet, world wide web, etc.

Data Source – Select the source of the data to include in the report. Use the plus and minus icons to expand the hierarchy as needed to display sub-items. If **Report can specify data sources from multiple hierarchies** is disabled, options include:

Selected Node – Select to include data from the node that is selected in the hierarchy at the time the report is generated, including all sub items. For example, if a SET is selected in the hierarchy when the report is generated, all POINTs from all Machines under that SET are included.

Current Hierarchy – Select to include all data from the hierarchy that is open when the report is generated.

Primary Hierarchy - Select to us the currently selected primary hierarchy as the report's data source.

Last Uploaded – Select to include the most recently uploaded data.

ROUTEs / **Workspace** – These options appear in the upper section's **Data source** list if the report is only available for this hierarchy (i.e., **Report is available for all hierarchies** is disabled). Select a previously defined ROUTE or Workspace to use with the report.

- ROUTE based reports, such as ROUTE Statistics, ROUTE History, Compliance, and Collection Status, use data from the ROUTEs specified on the **Definition** tab, rather than the source data specified on the **Assign** tab.

Profile Devices – Select a Microlog Inspector profile to include the most recently uploaded data from device assigned the selected profile.

If **Report can specify data sources from multiple hierarchies** is enabled, options include:

Selected Node – Select to include data from the node that is selected in the hierarchy at the time the report is generated, including all sub items.

Select Data Source - Select multiple hierarchies, groups, and POINTs to include in your report.

Define title, data source, and/or history name at time of generation – Enable to receive an option to override the **Data source** selection at the time the report is run. If this is enabled, you must manually specify this report information each time the report is generated. Before report generation occurs, the **Select Data Source** dialog displays, prompting you to enter report information and select the report's data source. (See **Selecting the Data Source** below for details.)

If the **Report is available for all hierarchies** check box is enabled on the **Report Editor**'s **General** tab, the dialog's bottom area allows you to configure reports specifically for use with the current Hierarchy only. If you do not use the bottom area's configuration options, the default configuration from the dialog's top section is used.

- You must edit the report in each hierarchy where you wish to override the default options.

The top line of this section displays the current hierarchy name and indicates whether the **default** settings are used, or if **custom** overrides have been established in the fields below.

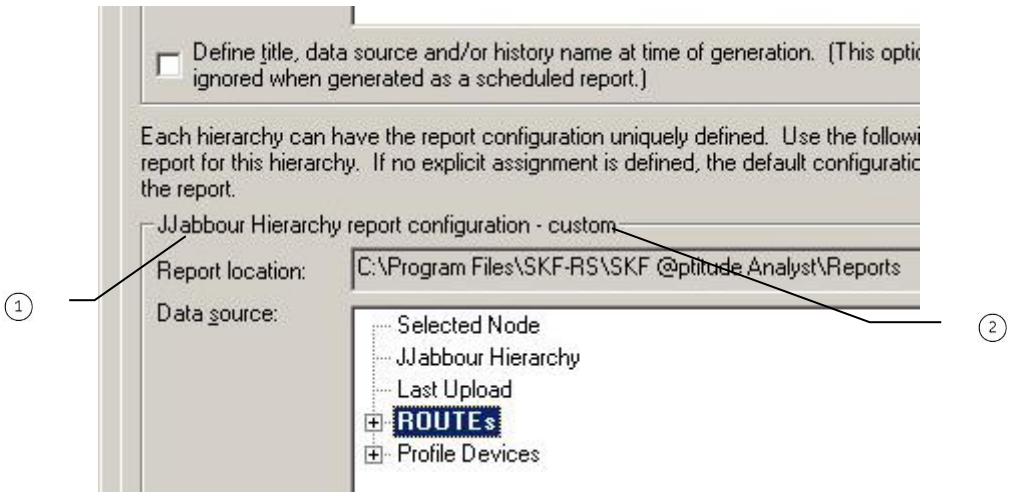


Figure 5 - 8
The **Report Editor** / **Assign** Tab's **Default / Custom** Line.

① hierarchy name
② default / custom

The remaining fields function as previously described. These settings will be used to generate the selected report type for the current Hierarchy only.

- Click the **Use Defaults** button to clear your custom configuration and return to all default settings.

Selecting the Data Source

If **Define title, data source, and/or history name at time of generation** is enabled on the **Report Editor**'s **Assign** tab, the **Select Data Source** dialog appears when the report is generated.

The **Select Data Source** dialog varies, depending on whether **Report can specify data sources from multiple hierarchies** is enabled on the **Report Editor**'s **General** tab.

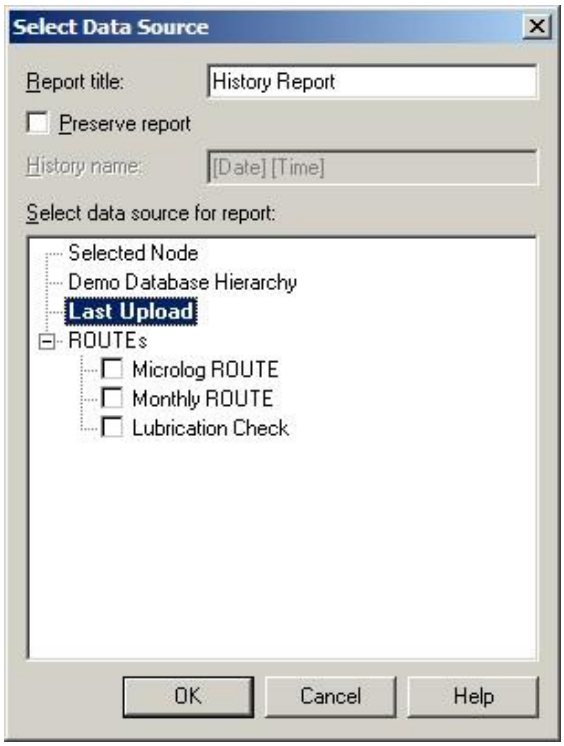


Figure 5 - 9
The **Select Data Source** Dialog.

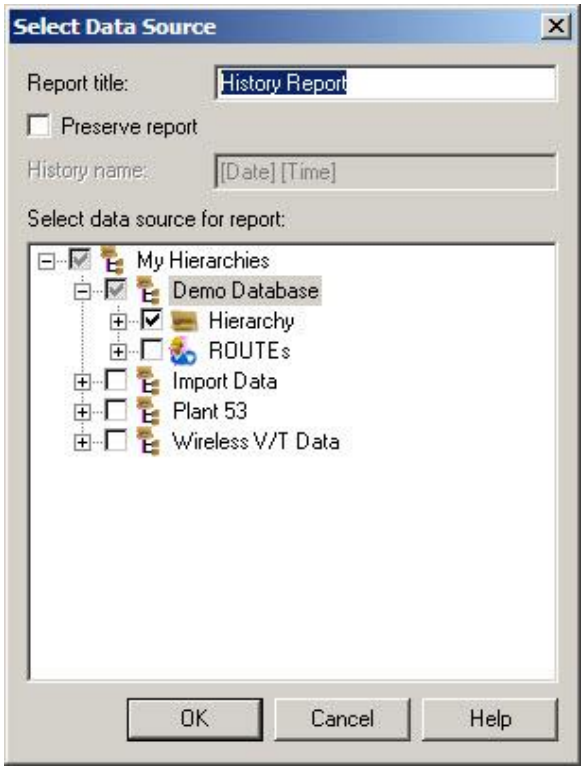


Figure 5 - 10
The **Select Data Source** Dialog when **Report can specify data sources from multiple hierarchies** is Enabled on the **Report Editor**'s **General** Tab.

This dialog lets you configure the report title, specify whether to preserve a copy of the generated report, and specify the data source for this instance of the report.

> ➢ The data source defaults to the **Data source** setting on the **Report Editor**'s **Assign** tab.

- In the **Report title** field, enter the report title.
- Click the **Preserve report** checkbox to enable report preservation. When enabled, newly generated reports are archived, organized (by default) by report definition and date / time.

If **Preserve report** is enabled, you can also manually enter a **History name** to use when organizing your preserved reports, instead of the default date / time naming method. The **History name** determines how the reports are organized, and how they display in both the **Report Editor / General's History** window, and in the separate preserved reports directory created in the disk directory (folder) designated as the report storage location. The **History name** field displays **"[Date] [Time]"** until you type in the field. If you do not type within the **History name** field, the preserved report is named and organized by its date / time.

To assign a manual history name:

- In the **History name** field, enter text to identify and organize your preserved reports, overriding the default date / time history name.

To select the report's data source:

- From the **Select data source for report** window, click to select the appropriate data source from the displayed hierarchy list.

> ➢ Use the plus and minus icons to expand the hierarchy as needed to display sub-items.

Appendix A
SKF @ptitude Inspector Toolbars

Toolbar Tools

The following figures display @ptitude Inspector's default toolbars and their default toolbar button assignments are discussed below. You can enable any or all of the available buttons by using the **Custom Toolbar** dialog discussed later in this chapter.

Primary Toolbar


Hierarchy Window – open Hierarchy window. Organizes your monitored machinery measurements into a hierarchy structure consisting of Groups (which may be organizational SETs, machines, or custom groups) and measurement POINTs.


ROUTE Manager – open ROUTE dialog. A ROUTE is a measurement POINT collection sequence that is downloaded to a data acquisition device (DAD).


Workspace Manager – open Workspace dialog. A workspace organizes specific Groups into one location for easy comparison and analysis.


Microlog Inspector Status – open Microlog Inspector Device Status window.


Properties – open Properties dialog for the active hierarchy item (could be Group Properties or POINT Properties).


Alarm Window – open Alarms window which displays all POINTs in alarm in the selected view.


Report Setup – open Reports dialog.


Print – print window contents (also print to file).


System Information – open System Information view to see the Event Log and Online Data.


Exit – exit the application. A confirmation message displays before exiting.

Hierarchy View Toolbar


Alarm Details – open the Alarm Details view.


Apply Filter – open Apply Filter dialog. When a filter is applied, the resulting items display in a new Workspace window.


Apply Template – open the Apply Template dialog to select a template to apply to the hierarchy.

Navigation Toolbar


Auto Link – link any open Hierarchy, Workspace, ROUTE, Transient, Template, or Alarms window (source windows) to any open Alarm Details or Plot window (target windows). With Auto Link enabled, selections in one of the source type windows automatically affect all open target type windows.

For example, suppose you have a Hierarchy window open (source type window), select a POINT, and display its spectrum (target type window). With Auto Link enabled, when you select a different POINT in the Hierarchy window, the plot window automatically updates to display the newly selected POINT's spectrum.


Previous POINT – move focus to the previous POINT in the hierarchy.


Next POINT – move focus to the next POINT in the hierarchy.


Previous Measurement - move focus to the previous measurement.


Next Measurement - move focus to the next measurement.

View Icons Toolbar


Large Icons – display measurements as large icons.


Small Icons – display measurements as small icons.


Simple List Icons – display measurements as a simple list.


Detailed List Icons – display measurements as a detailed list.

Plots Toolbar


Trend Plot – view a POINT's most recent reading in comparison with its previous readings and its alarm set up. See how the POINT is "trending" over time to detect gradual changes in process conditions.


MCD Plot – view stacked trend plots for the three values of an MCD measurement: velocity, enveloped acceleration, and temperature.


Inspection Plot – view inspection measurement results for up to six points simultaneously. Enables viewing inspection history over time.


Spectrum Plot – view measured vibration signals with respect to frequency. An FFT spectrum plot displays vibration amplitudes at various component frequencies.


All Plots – open the All Plots dialog to select the plot type to display from all available plots, including combination plots, in addition to the plot types commonly represented with toolbar buttons.

Plot Tools Toolbar


Plot Settings – open Plot Settings dialog for the active plot.


Information Area – open information area beneath the active plot.


Set Speed – set the cursor position to correspond with the spectrum's running speed.


Set Speed (Multiple) – set the same measurement speed for multiple FFT measurements


Activate Zoom – Click to activate the zoom feature, then click and drag across the area of the plot which you would like to zoom. The plot will redraw to display the selected area. When using a mouse scroll wheel, position your cursor over the area of the plot which you would like to zoom. While holding the Ctrl key, roll the mouse scroll wheel up or down. Rolling up causes the plot to zoom in, while rolling down causes the plot to zoom out.


Zoom Out – zoom out one level.


Live Data – initiates live data mode when a single POINT is selected. The active display updates as new data is collected by its on-line device. Previous spectra and time waveform plots are overwritten by updated spectra / time waveforms.


Play Sound Byte – launches the utility providing various playback options to listen to sound data waveform through your computer's speakers or connected earphones.

Overlays Toolbar


Overlay Settings – open the Overlay Settings dialog for the selected overlay.


Single Cursor – display single cursor. Use a single cursor to view individual measurement data on the trend plot by moving the cursor to various measurement records. Use a single cursor on a spectrum plot to display the amplitude for the frequency of the cursor's current placement.


Inspection Cursor – display inspection cursor to view individual measurement data on the inspection plot by moving the cursor to various measurement values. Specific information displays on the Inspection tab: the POINT on which the cursor is currently positioned, cursor color, date / time, operator name, and inspection result.


CTA Cursor – display CTA cursor on a time plot and view a time interval's average waveform. Opens CTA Cursor tab in the plot information area to show details of label, interval, frequency, magnitude, and contribution (%).


MCD Alarm – display MCD alarm levels on the plot.


MCD Cursor – display MCD cursor to view individual measurement values on the MCD plot. Opens the MCD Cursor tab in the information area to show: the POINT the cursor is currently positioned on, cursor color, acceleration / velocity / temperature values, and date / time.


MCD Curve Fit – project the linear direction a trend is heading based on current data.


Text Annotation – open Text Annotation Settings dialog.


Overall Alarm – display the alert and danger levels designated for detection of machinery faults. The overall alarm levels are based on the measurement's "baseline" vibration level.


All Overlays – open the All Overlays dialog and select the overlays to display.

Custom Toolbars

Toolbar buttons are available for each menu item and available function. By default, only toolbar buttons for commonly utilized features are active. Buttons are arranged by related functionality in separate sections of the toolbar area. You can enable any or all of the available buttons using the **Custom Toolbar** dialog.

To open the Custom Toolbar dialog:

- Select the **Customize** menu's **Toolbars** option. The **Custom Toolbar** dialog displays.

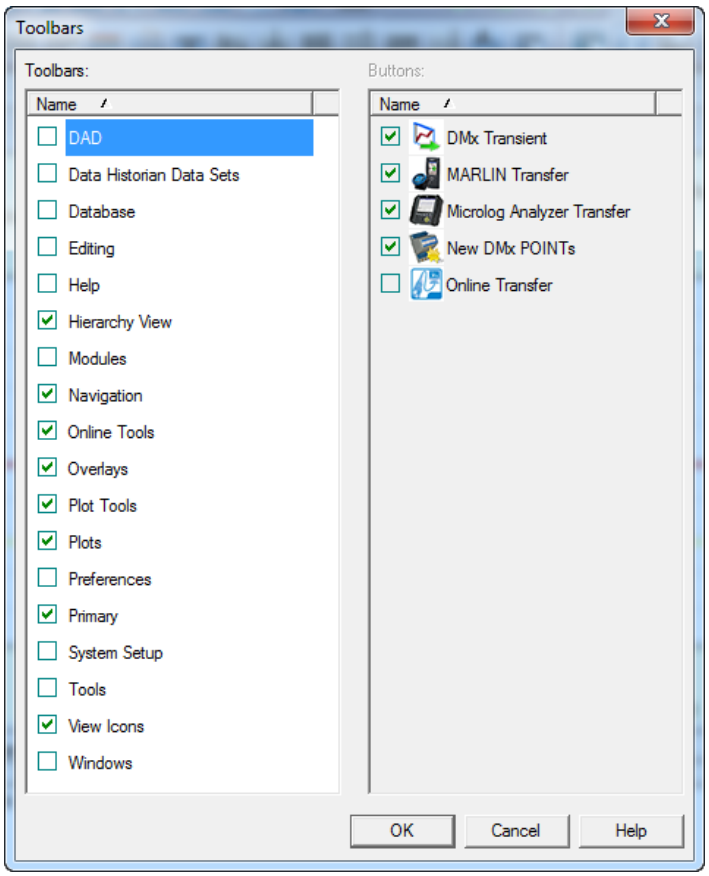


Figure A - 1.
The Custom **Toolbars** Dialog.

The Custom **Toolbars** dialog has two main areas. The **Toolbars** area displays all available toolbars, sorted by name. All available buttons (active and non-active) for the selected toolbar display in the dialog's second area, **Buttons**.

You can configure each toolbar to display the buttons you frequently use. You may *activate* buttons that are *inactive* by default, or *inactivate* buttons that are *active* by default.

By default, the **Hierarchy View, Navigation, Overlays, Plot Views, Plots, Primary,** and **View Icons** toolbars are activated.

- Click the checkbox next to the toolbar to activate the toolbar.
- Click the checkbox next to the individual available buttons to activate the buttons for the selected toolbar.
- Click **Display toolbar titles** to display the toolbar's descriptive name on the toolbar itself for easy identification.
- Click **OK** to rebuild all toolbars incorporating your selections.
    - ➢ Custom toolbar selections are stored with your user name and automatically display for you after initial log in.

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