Using Data Entry Grids and Forms

Information in this section explains how to use the data entry grids and forms in *Edit <module> Data*. It explains how to add and edit facility information, inspection, and maintenance records as well as records for continuous survey data. The information is intended for all users unless noted otherwise.

Topics in this section include those in the following list:

- *Data Entry Grid Overview*

- *Working with Data Entry Grids* (page 227)

- *Working with Data Entry Forms* (page 279)

- *Working with Continuous Survey Data* (page 284)

- *Working with Themes and Filter Groups* (page 316)

- *Working with Records* (page 333)

Data Entry Grid Overview

PCS Axis provides different types of data entry grids (also referred to as grids) and mini-grids for organizing and managing facility data. Information in this section provides a description of these grids. Topics include those in the following list:

- *Types of Data Entry Grids* (page 221)

- *Understanding Field Caption Colors* (page 223)

- *Rearranging and Resizing Grid Columns* (page 224)

- *Locking and Unlocking Grid Columns* (page 224)

- *Replacing All Values* (page 225)

- *Working with Derived Fields* (page 226)

Types of Data Entry Grids

PCS Axis provides the following data entry grids and mini-grids for organizing and managing facility data. These grids are similar to a spreadsheet in appearance with facility data presented in columns, rows, and individual fields. Several options are available for customizing the layout and sorting order of a grid, as well as applying data filters that allow you to work with a subset of facility records.

- *Information grid*: Use the *Information* grid to add and edit permanent facility information, such as the milepost number, location description, operating status, protection criteria, and permanent comments. The *Information* grid is also used for activating fields in the *Inspection* grid.

- *Inspection grid*: Use the *Inspection* grid to add and edit survey inspection data for facilities on a pipeline segment, such as facility inspection readings, GPS coordinates, survey folder assignment, survey remarks, technician name, and so on.

- *Test Point Detail Information and Inspection mini-grids*: Use the CPDM *Test Point Detail* mini-grids to manage multiple potential measurements for survey points linked to a test point record. These mini-grids function in a similar manner as the rectifier mini-grids when linking rectifier anodes and negatives. The potential measurement selected for compliance reporting in the *Detail Inspection* mini-grid copies to the linked test point record in the main *Inspection* grid.


NOTE: The *Test Point Detail* mini-grids become available for use after enabling the system option *Show Detail Inspection Entry Grid*. When using the optional *Telluric Compensation* feature, the mini-grids display by default and cannot be disabled.

- *Maintenance grid*: Use the *Maintenance* grid to add and edit maintenance and repair records for facilities on a pipeline segment.

- *Facility Level Override mini-grid:* The *Information* grid for all modules includes the *Facility Level Override* mini-grid. Scheduling properties in *Edit Schedule Settings*can be overridden at the facility level using this mini-grid.

- *Rectifier Information mini-grids*: The CPDM Rectifier Information grid includes the Rectifier Anode Information and Rectifier Negative Information mini-grids. Use these mini-grids to add and delete records for impressed anodes and negatives linked to a rectifier information record.

- *Rectifier Inspection mini-grids*: The CPDM Rectifier Inspection grid includes the Rectifier Anode Inspection and Rectifier Negative Inspection mini-grids. Use these mini-grids to enter inspection readings for rectifier anode(s) and negatives linked to one or more pipeline segments.

Understanding Field Caption Colors

PCS Axis uses a color code system in field captions throughout the system that allows you to easily identify one data type from another (Figure 7-1).

Grid colummn headings with color-coded field captions.

Grid layout theme with color-coded field captions.
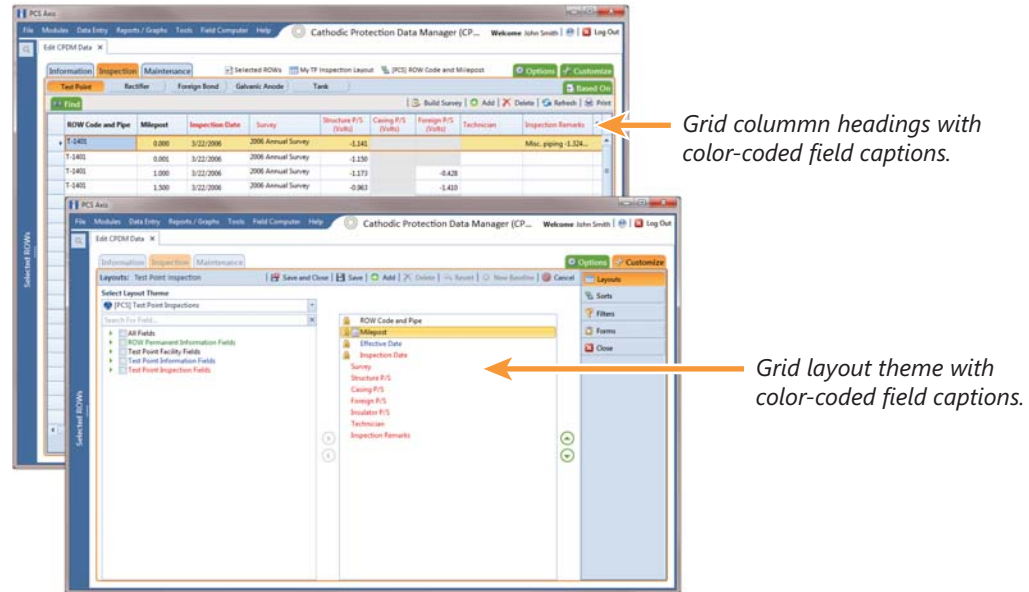
Figure 7-1. Colors in Field Captions

Field captions in column headings of a data entry grid are color-coded to help distinguish different data types, such as information, inspection, and maintenance fields. Likewise, field captions in selection lists are also color-coded when creating themes in the *Customize* tab. The following table identifies the different data types with corresponding colors.

Data Type	Color
Facility Field	Black
Facility Information Field	Blue
Inspection Field	Red
Maintenance Field	Red
ROW and Pipeline Field	Green
All Others	Black

Rearranging and Resizing Grid Columns

Rearranging grid columns in a data entry grid is easily accomplished by dragging and dropping a grid column to a new position. Performing this function requires appropriate user permissions for modifying a data entry grid layout theme. If the data entry grid layout theme is *Public*, changes apply only to the current session of the data entry grid and are not saved in the layout theme. When the data entry grid layout theme is *Private*, the new column order is saved in the data entry grid layout theme.

To rearrange a grid column:

* Drag and drop a selected grid column to a new position in the data entry grid.

To resize a grid column:

* Place the mouse over a column boundary to change the cursor to a horizontal resize cursor ⟨↔⟩. Then click and drag the column boundary to resize the grid column.

Locking and Unlocking Grid Columns

You can lock a group of grid columns on the left side of a data entry grid to prevent them from moving when scrolling the data entry grid. Grid columns to the right of locked columns remain scrollable.

To lock a grid column:

* Right-click a grid column and then select **Lock Column** in the shortcut menu that opens (Figure 7-2).
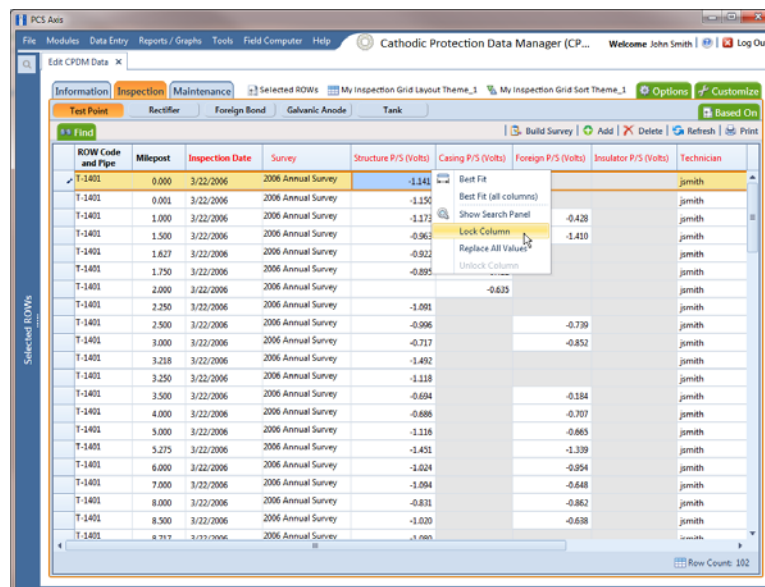
Figure 7-2. Lock Grid Column

To unlock a locked grid column:

- Right-click the locked grid column and then select **Unlock Column** in the shortcut menu that opens.

Replacing All Values

When you want to replace a value in all fields of a selected grid column with the same value, right-click the grid column and select **Replace All Values** in the shortcut menu. When the *Replace All Values* dialog box opens, enter the information that will be used to replace values in all fields of the selected grid column and then click **OK**.

The *Replace All Values* command is not available for read-only grid columns, fields in a mini-grid, or picklist fields.

Working with Derived Fields

A derived field is a system calculated field with a value based on values in dependent fields. For example, PCS Axis calculates a value for the field *Effective IR Correction* based on values in the following dependent fields:

- User IR Correction

- Structure P/S

- Structure IRF

- Inspection Date

When a value for a dependent field has been updated in a data entry grid, a ⬤ notification icon displays in the derived field indicating the value has changed and the data entry grid should be refreshed. Clicking the 🔄 **Refresh** button updates all derived values and removes the notification icon (Figure 7-3).

Figure 7-3. Derived Field

Working with Data Entry Grids

Data entry grids in *Edit <module> Data* allow you to edit and manage multiple facility records linked to one or more pipeline segments. You can add and edit facility information, inspection, and maintenance records using the *Information Inspection*, and *Maintenance* data entry grids.

Although the CPDM module is used in the following examples, the information applies to all modules except Indirect Survey Manager (ISM). For information about the ISM module, begin with the section entitled *Working with Continuous Survey Data* (page 284).

Information in this section explains how to use the most common features of a data entry grid. For information about other features, see *Working with Themes and Filter Groups* (page 316) and *Working with Records* (page 333).

Topics in this section include those in the following list:

- *Adding Facility Records* (page 227)

- *Creating History Records Using an Effective Date* (page 245)

- *Viewing Records in a Grid* (page 249)

- *Filtering Data in a Grid* (page 264)

- *Building a Survey in the Inspection Grid* (page 270)

- *Using Find to Search a Data Entry Grid* (page 274)

- *Printing, Exporting, or Emailing Grid Content* (page 276)

Adding Facility Records

Instructions in the following topics describe how to add facility information, inspection, and maintenance records in a data entry grid:

- *Adding a Facility Information Record*

- *Adding a Facility Inspection Record* (page 233)

- *Adding a Facility Maintenance Record* (page 239)

Adding a Facility Information Record

Use the *Information* grid to add a record for a new facility on a pipeline; add an information record for an existing facility in the grid; add a history record to maintain permanent information about a facility; and activate certain fields for data entry in the *Inspection* grid – such as *Activate Structure P/S* and *Activate Casing P/S*.

The procedure in this section covers the following scenarios for adding a record in the *Information* grid:

- adding an information record for an existing facility in the grid (**step 7**)

- adding a record for a new facility on a pipeline (**step f**)

Complete the following steps:

1 Click the **Select ROWs** button ![magnifier icon] to open the *Select ROWs* window (Figure 7-4).
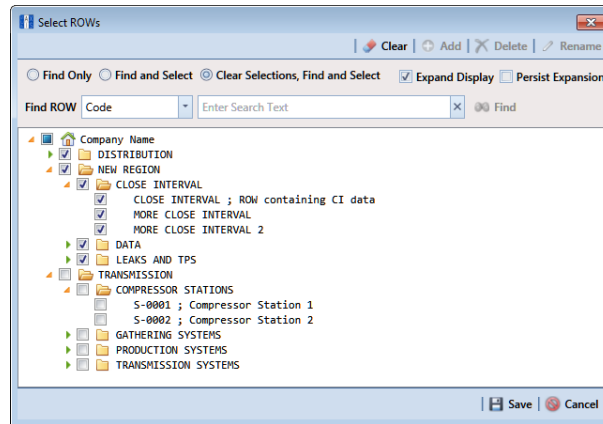
Figure 7-4. Select ROWs

2 Select one or more pipeline segments with facilities you want to work with by clicking the check box for each pipeline segment. Click ![save icon] **Save** to close the window.

NOTE: A check mark inside a check box indicates a selection. To clear a selection, click the check box again to remove the check mark. A shaded check box indicates selection of some, not all, child folders, ROWs, and pipelines.

NOTE: Although the CPDM module and test point facility type are both referenced in this procedure, instructions apply to any PCS Axis module and facility type.

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3 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window (Figure 7-5).
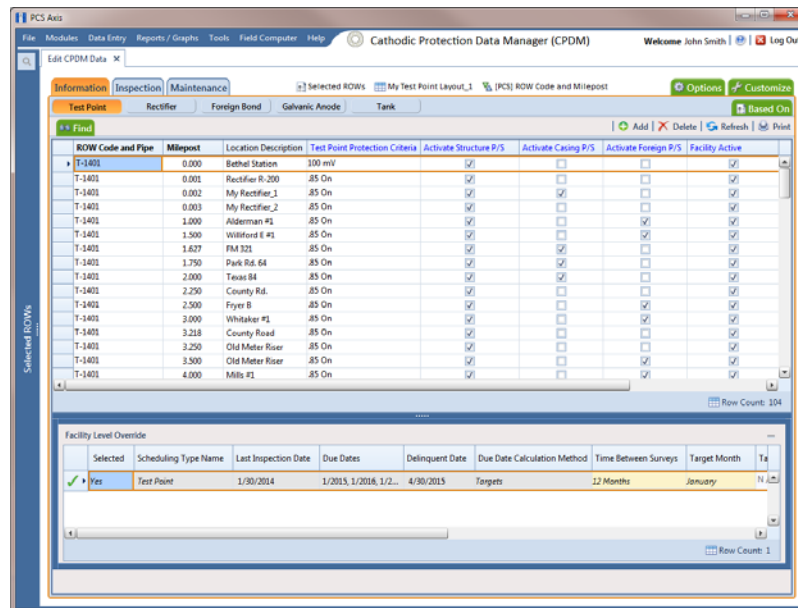
Figure 7-5. Information Grid

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Open the *Information* grid for a facility type. For example, click the **Information** tab | Information | and then a facility type button, such as **Test Point** | Test Point |.

6 Click ⊕ **Add** to open the *Add Record* dialog box (Figure 7-6). Then continue with one of the following steps:

HINT: Alternatively, you can use keyboard shortcut keys to add records. Press **F4** to add an information record for an existing facility in the grid. Press **F8** to add a new facility in the grid with an information record.

- To add an information record for an existing facility in the grid, continue with **step 7**.

- To add a new facility in the grid with an information record, continue with **step f**.
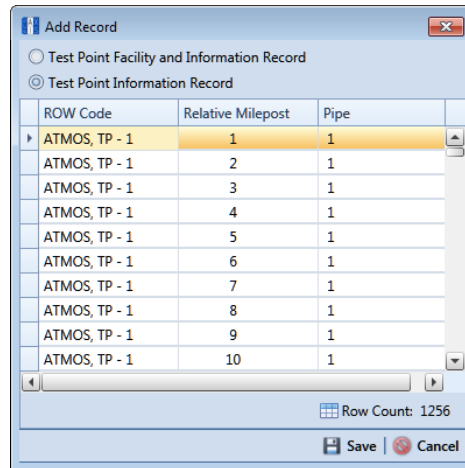
Figure 7-6. Add Record

7 To add an information record for an existing facility in the grid:

a Click the option **Test Point Information Record**. Then select a facility by clicking on the facility's name in the *Add Record* dialog box.

b Click ⊞ **Save.**

A new *Add Record* dialog box displays required field(s) for data entry (Figure 7-7).
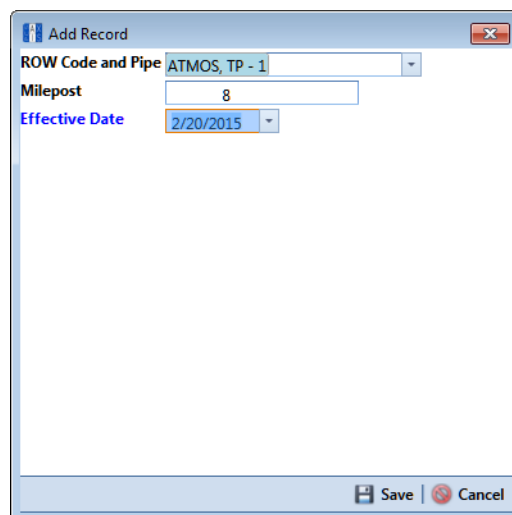
Figure 7-7. Add Record

c Type a date in the **Effective Date** field using the format MM/DD/YYYY to indicate the month, day, and year. Or click the down arrow in the field and select a date using a calendar.

Effective Date is the date a history record becomes effective. New history records are created with an *Effective Date* when important permanent information changes. See *Creating History Records Using an Effective Date* (page 245) for more information.

d Click ![save icon] **Save** to close the *Add Record* dialog box and add an information record in the grid for the existing facility.

e Provide other facility data in the grid as needed, such as *Permanent Comments* (Figure 7-8).
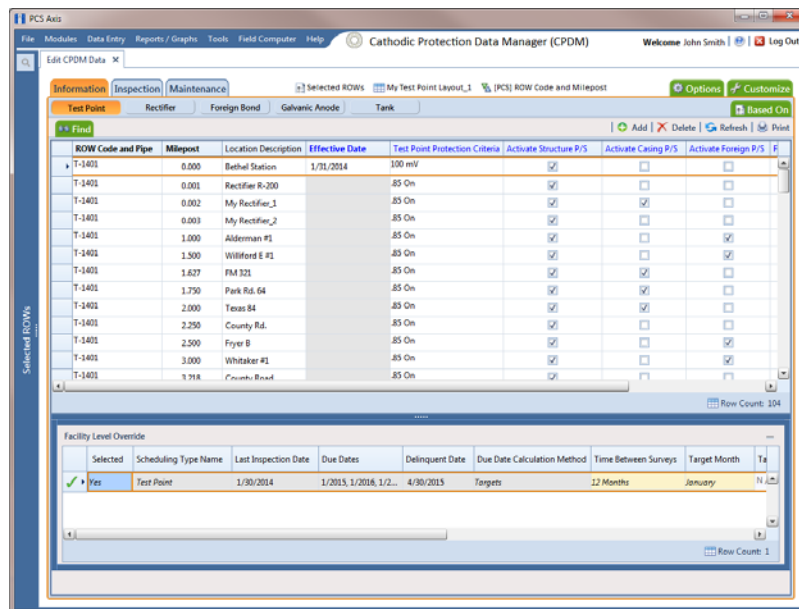
Figure 7-8. Add Record

f Click ![refresh icon] **Refresh** to update the grid.

8 To add a record in the *Information* grid for a new facility:

a Click the option **Test Point Facility and Information Record**.

b Select the pipeline in the dialog box that you want to add a new facility and information record. For example, pipeline *T-1401* is selected in Figure 7-9.
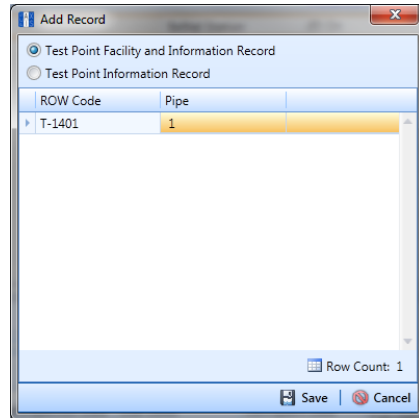
Figure 7-9. Add Record

c   Click ![save icon] **Save** to display required field(s) for data entry. Required fields are identified with the ![error icon] icon, such as *Milepost* (Figure 7-10).
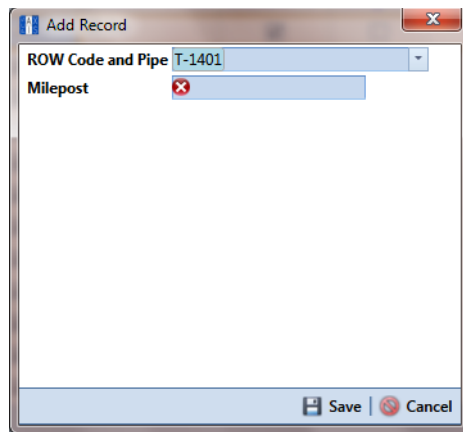
Figure 7-10. Add Record

d   Type the facility milepost number in the **Milepost** field. Based on your system configuration, the *Milepost* field may have a different caption for *User Location Name*, such as *Station Number* or other type of identifier.

e   Click ![save icon] **Save** to close the dialog box and add the new facility record in the *Information* grid.

f Activate one or more fields for data entry in the *Inspection* grid. Click the check box for an "activate" field in the *Information* grid to place a check mark inside the check box.

For example, click the check box *Activate Casing P/S* for *Milepost 0.002* (Figure 7-11).
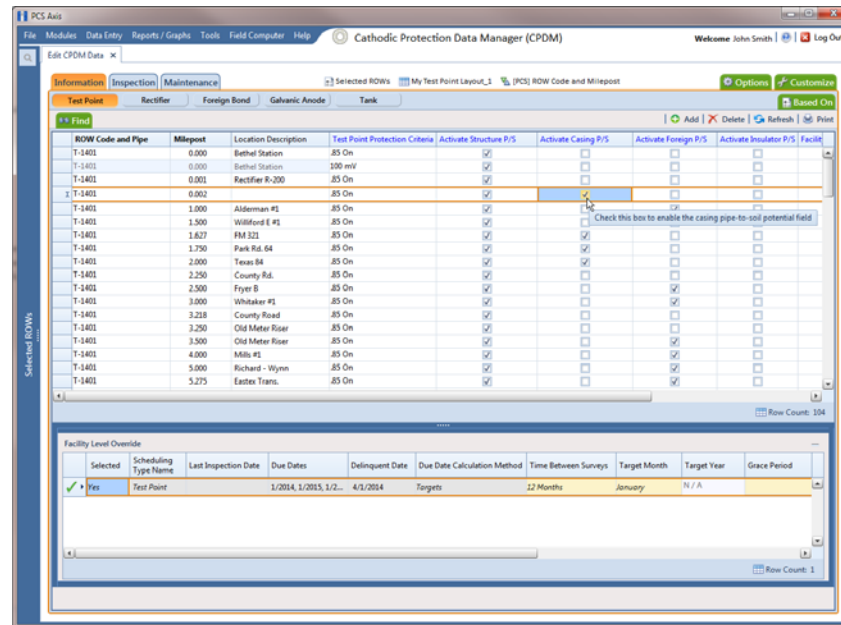
Figure 7-11. Information Grid

g Provide other facility information as needed. For example, type a description of the facility location in the **Location Description** field and comments about the facility in the **Permanent Comments** field.

h Click **Refresh** to update the grid.

Adding a Facility Inspection Record

Information in this section covers the following scenarios for adding a record in the *Inspection* grid:

* adding an inspection record for an existing facility (**step 7**)

* adding a new facility with an inspection record (**step f**)

Complete the following steps:

1 Click the **Select ROWs** button to open the *Select ROWs* window (Figure 7-12).
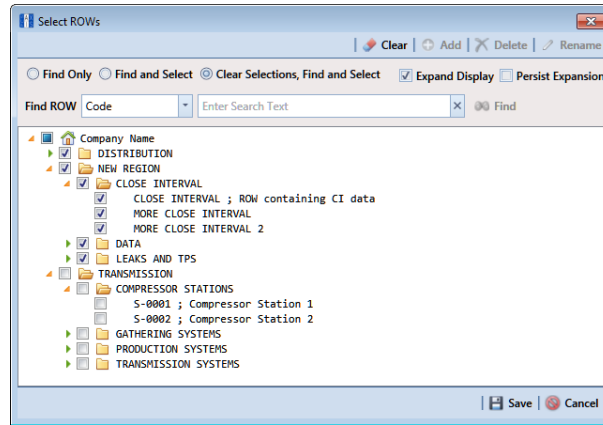
Figure 7-12. Select ROWs

2 Select one or more pipeline segments with facilities you want to work with, then click ![save icon] **Save** to close the window.

3 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window (Figure 7-13).

Figure 7-13. Inspection Grid

4 Open the *Inspection* grid for a facility type. For example, click the **Inspection** tab ![Inspection] and then a facility type button, such as **Test Point** ![Test Point].

NOTE: Although the CPDM module and test point facility type are both referenced in this procedure, instructions apply to any PCS Axis module and facility type.

5   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

6   Click ⊕ **Add** to open the *Add Record* dialog box (Figure 7-14). Then continue with one of the following steps:

HINT: Alternatively, you can use keyboard shortcut keys to add records. Press **F4** to add an inspection record for an existing facility in the grid. Press **F8** to add a new facility in the grid with an inspection record.
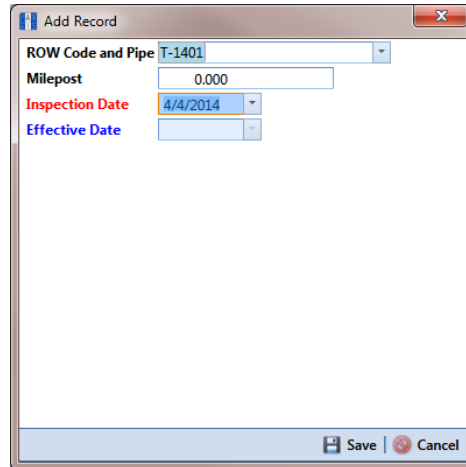
- To add an inspection record for an existing facility in the grid, continue with **step 7**.

- To add a new facility in the grid with an inspection record, continue with **step f**.
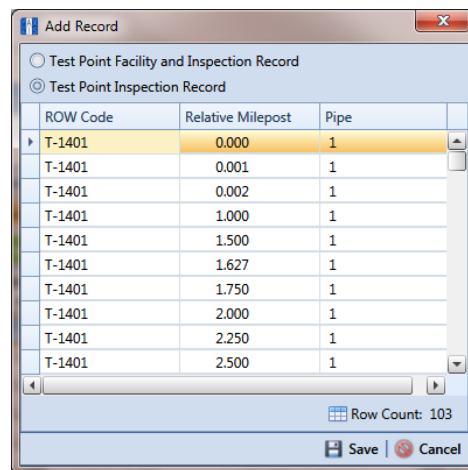
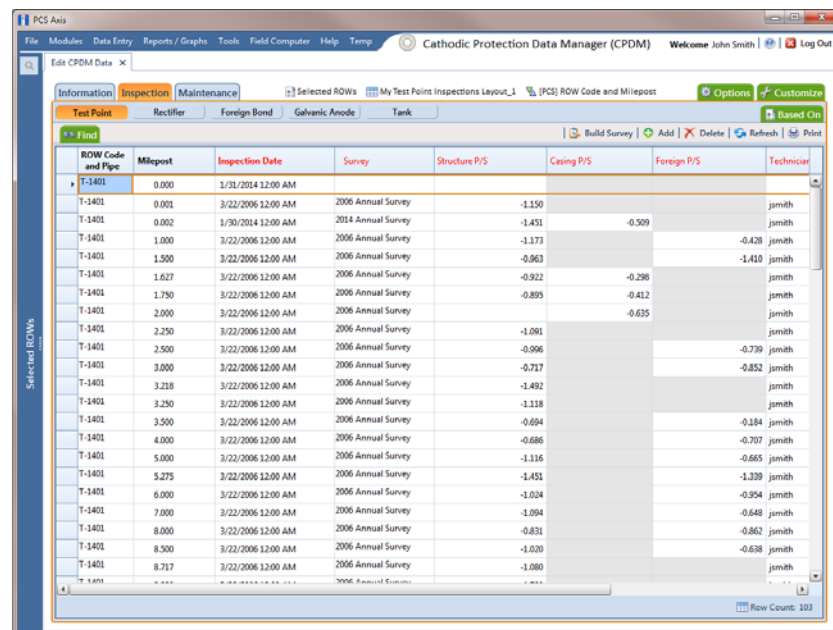

Figure 7-14. Add Record

7   To add an inspection record for an existing facility in the grid:

a   Click the option **Test Point Inspection Record**.

b   Select a pipeline with the facility you want to add an inspection record. For example, pipeline *T-1401* and the facility at *Relative Milepost 0.000* (Figure 7-14).

c Click ![save icon] **Save** to display required field(s) for data entry (Figure 7-15).
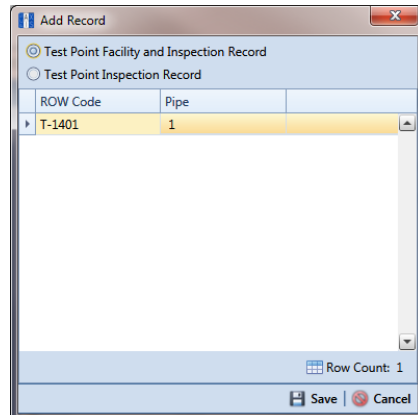

Figure 7-15. Add Record

d Type an inspection date in the **Inspection Date** field using the format MM/DD/YYYY to indicate the month, day, and year. Or click the down arrow in the field and select an inspection date using a calendar.

e Click ![save icon] **Save** to close the dialog box and add an inspection record in the grid for the existing facility (Figure 7-16).


Figure 7-16. Inspection Grid

f   Provide other inspection data in remaining fields. For example, click the **Survey** field and select a survey folder in the selection list. Then enter a structure pipe-to-soil reading in the field **Structure P/S**.

g   Click 🔄 **Refresh** to update the grid.

8   To add a new facility with an inspection record in the *Inspection* grid:

a   Click the option **Test Point Facility and Inspection Record**.
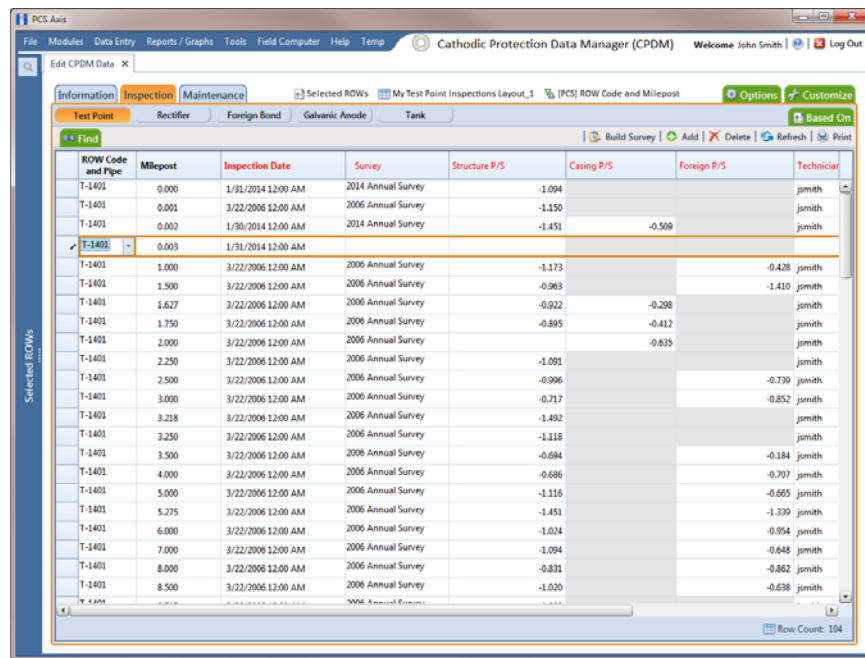

Figure 7-17. Add Record

b   Click 💾 **Save** to display required field(s) for data entry. Required fields are identified with the ❌ icon, such as *Milepost* (Figure 7-18).
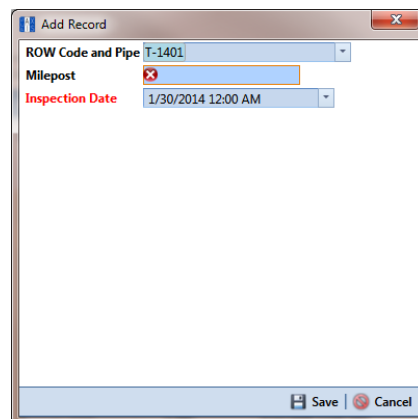
Figure 7-18. Add Record

c Type the facility milepost number in the **Milepost** field. Based on your system configuration, the *Milepost* field may have a different caption for *User Location Name*, such as *Station Number* or other type of identifier.

d Type an inspection date in the **Inspection Date** field using the format MM/DD/YYYY to indicate the month, day, and year. Or click the down arrow in the field and select an inspection date using a calendar.

e Click ![Save icon] **Save** to close the dialog box and add the new facility with an inspection record in the grid (Figure 7-19).

Figure 7-19. Inspection Grid

f Provide other inspection data in remaining fields. For example, click the **Survey** field and select a survey folder in the selection list. Then enter a structure pipe-to-soil reading in the field **Structure P/S**.

g Click ![Refresh icon] **Refresh** to update the grid.

Adding a Facility Maintenance Record

Information in this section covers the following scenarios for adding a record in the *Maintenance* grid:

- adding a maintenance record for an existing facility (**step 7**)

- adding a new facility with a maintenance record (**step f**)

Complete the following steps:

1   Click the **Select ROWs** button 🔎 to open the *Select ROWs* window (Figure 7-20).
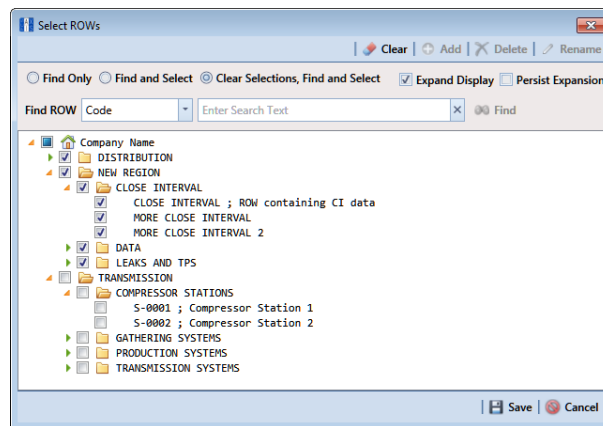
Figure 7-20. Select ROWs

2   Select one or more pipeline segments with facilities you want to work with, then click 💾 **Save** to close the window.

3 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window (Figure 7-21).

Figure 7-21. Maintenance Grid

4 Open the *Maintenance* grid for a facility type. For example, click the **Maintenance** tab ⬛Maintenance and then a facility type button, such as **Test Point** ⬛Test Point.

NOTE: Although the CPDM module and test point facility type are both referenced in this procedure, instructions apply to any PCS Axis module and facility type.

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5 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

6 Click ⊕ **Add** to open the *Add Record* dialog box (Figure 7-22). Then continue with one of the following steps:

HINT: Alternatively, you can use keyboard shortcut keys to add records. Press **F4** to add an maintenance record for an existing facility in the grid. Press **F8** to add a new facility in the grid with an maintenance record.

- To add a maintenance record for an existing facility in the grid, continue with **step 7**.

- To add a new facility in the grid with a maintenance record, continue with **step f**.
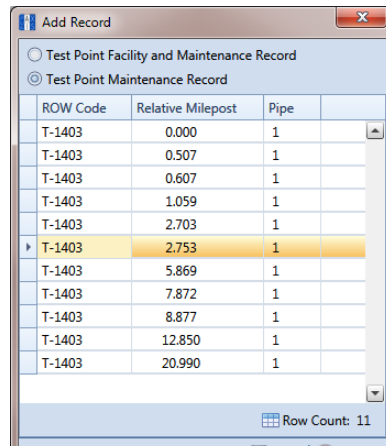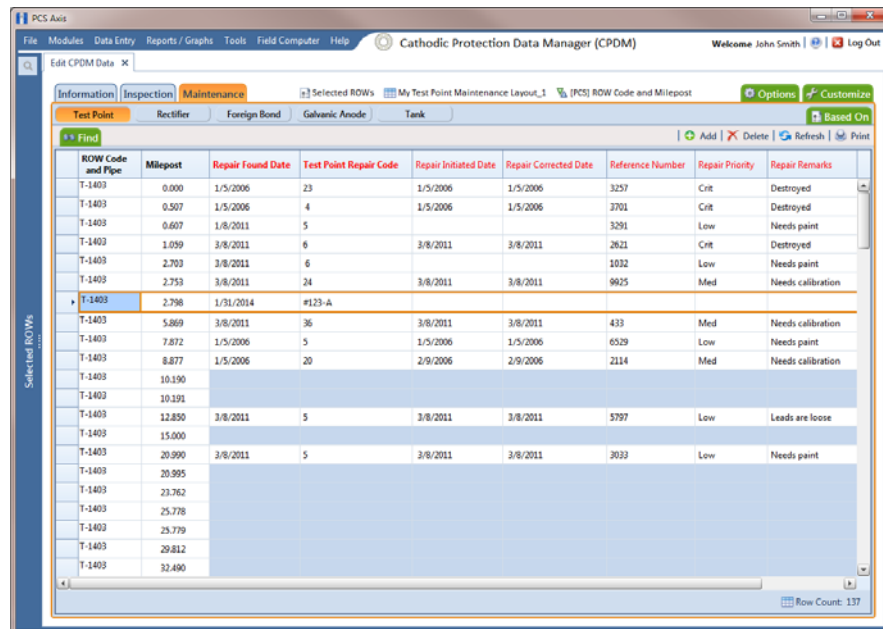
Figure 7-22. Add Record

7 To add a maintenance record for an existing facility in the grid:

a Click the option **Test Point Maintenance Record**. Then select a facility in the list of facilities. For example, the facility at *Milepost 2.753* (Figure 7-22).

b Click 💾 **Save** to display required field(s) for data entry (Figure 7-23). Required fields are identified with the ⊗ icon, such as *Test Point Repair Code*.
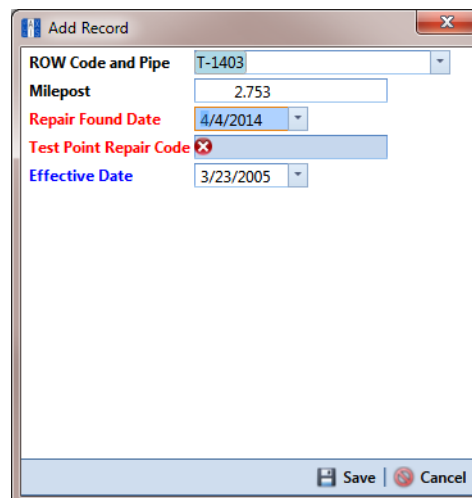
Figure 7-23. Add Record

c Type a date in the field **Repair Found Date** using the format MM/DD/YYYY to indicate the month, day, and year. Or click the down arrow in the field and select a date using a calendar.

d Type a repair code in the field **Test Point Repair Code**. Repair code is a designation used by your company to identify the type of repair. The field accepts up to 15 alphanumeric characters including special characters such as the pound sign (#), asterisk (*), or hyphen (-).

e Click ![save] **Save** to close the dialog box and add a maintenance record in the grid for the existing facility (Figure 7-24).

Figure 7-24. Maintenance Grid

f Provide other maintenance data as needed, such as *Repair Initiated Date*, *Repair Corrected Date*, *Repair Priority*, and *Repair Remarks*.

g Click ![refresh] **Refresh** to update the grid.

8 To add a new facility in the grid with a maintenance record:

a Click the option **Test Point Facility and Maintenance Record** in the *Add Record* dialog box (Figure 7-25).
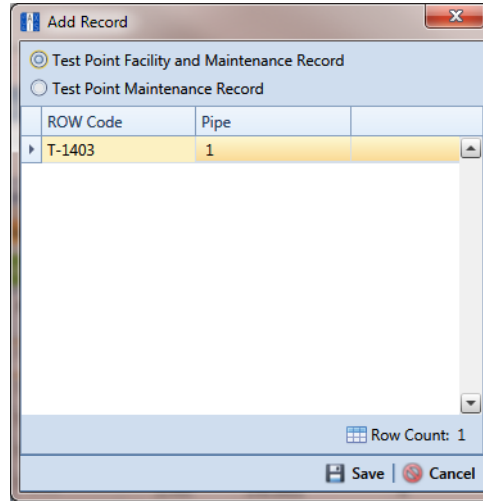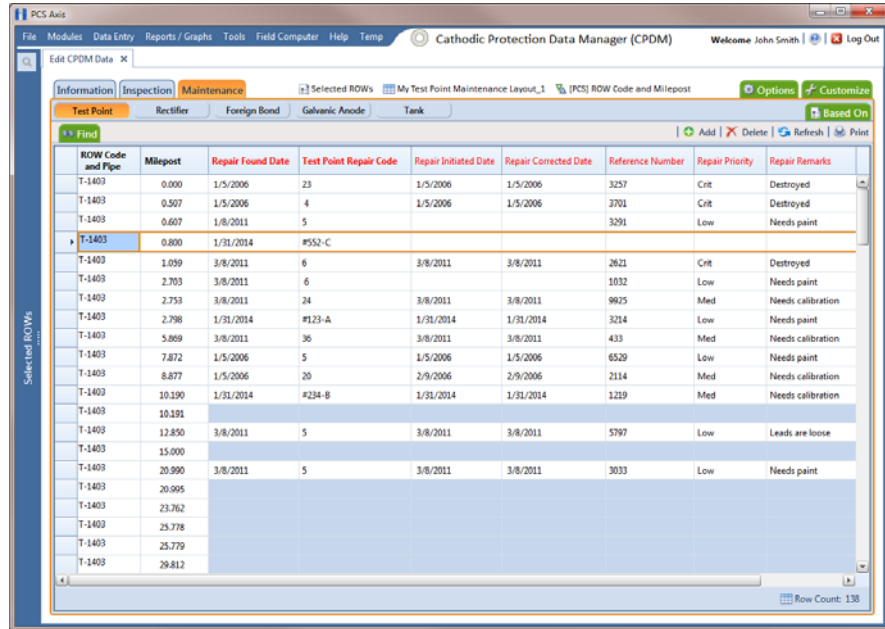
Figure 7-25. Add Record

b Select a pipeline in the dialog box that you want to add a new facility and maintenance record. For example, pipeline *T-1403* (Figure 7-25).

c Click ![save icon] **Save** to display required field(s) for data entry (Figure 7-26). Required fields are identified with the ⊗ icon, such as *Milepost* and *Test Point Repair Code*.
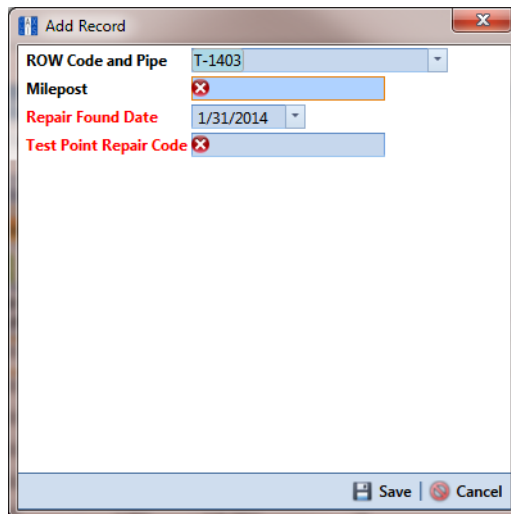
Figure 7-26. Add Record

d Type the facility milepost number in the **Milepost** field. Based on your system configuration, the *Milepost* field may have a different caption for *User Location Name*, such as *Station Number* or other type of identifier.

e Type a date in the field **Repair Found Date** using the format MM/DD/YYYY to indicate the month, day, and year. Or click the down arrow in the field and select a date using a calendar.

**f** Type a repair code in the field **Test Point Repair Code**. Repair code is a designation used by your company to identify the type of repair. The field accepts up to 15 alphanumeric characters including special characters such as the pound sign (#), asterisk (*), or hyphen (-).

g Click ![save icon] **Save** to close the dialog box and add the new facility with an maintenance record in the grid (Figure 7-27).


Figure 7-27. Maintenance Grid

h Provide other maintenance data as needed, such as *Repair Initiated Date*, *Repair Corrected Date*, *Repair Priority*, and *Repair Remarks*.

i Click ![refresh icon] **Refresh** to update the grid.

Creating History Records Using an Effective Date

A history record is a record that identifies changes in facility information, such as the operating status changing from active to inactive. Instead of deleting a facility record, create a history record.

History records help ensure compliance reports are accurate and other reports include correct facility data. For example, information for inactive facilities does not appear in a compliance or scheduling report. Other reports provide an optional filter for excluding inactive facilities. Because information for the time period prior to deactivating a facility is still valuable and is often needed for compliance reports, creating a history record helps ensure facility reporting is accurate.

Other scenarios describing when to create a history record include those in the following list:

- A facility is deactivated for a period of time and you want to ensure records exist showing when the facility was first activated, then deactivated, and finally reactivated again. By creating history records for each of these events, a complete history is available showing (1) when the facility was first active; (2) when the facility was deactivated; and (3) when the facility was reactivated.

- When a change is made to the protection criteria value, such as changing the value from *.85 On* to *100 mV*, creating a history record with an *Effective Date* identifying when the change occurred allows you to maintain a history for all readings with *.85 On* prior to the *Effective Date*, as well as all readings with *100 mV* after the *Effective Date*. Creating a history record in this case is important because the facility may meet the *100mV* criterion but fail the *.85 On* criterion. If history records do not exist, changing the criteria may show readings that were previously within criteria, are now out of criteria.

- You remove a casing and want to document that you are no longer recording *Casing P/S* inspection readings. Instead of disabling the *Activate Casing P/S* field in the *Information* grid, create a history record instead. History records provide useful data for an audit or compliance review.

The following list identifies other considerations when creating a history record:

- When you create a history record, all fields in the original record copy to the new record. Both records are initially the same except for the *Effective Date*. This allows you to change only the field(s) that are different in the new record and also create a history trail that includes the previous record.

- When the operating status of a facility changes from active to inactive or vice versa, do not use the original information record to change the operating status. Doing so causes information for the original record to be excluded in reports, such as compliance and delinquency reports. Create a history record to document this type of change instead.

- Do not enter the date a facility was put into service as the *Effective Date*. Use the *Effective Date* field to enter a date when a facility is taken out of service; when a change is made to the protection criteria; or when a facility is made inactive. *Effective Date* is used only with history records; it is empty in the original facility record. When a facility is put into service, add the date in the field labeled *Installation Date*.

- To help with using history records consistently, enable the field labeled *Warn Before Permanent History Record Changed Option* in Options (Tools > Options). When enabled, PCS Axis displays a warning message stating a history record should first be created before making changes.

To create a history record

Complete the following steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-28). Select pipeline segments with facilities you want to work with, then click 💾 **Save** to close the window.
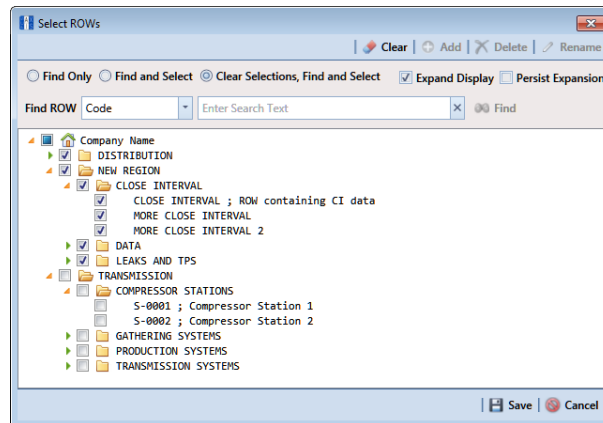
Figure 7-28. Select ROWs

2 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window (Figure 7-29).
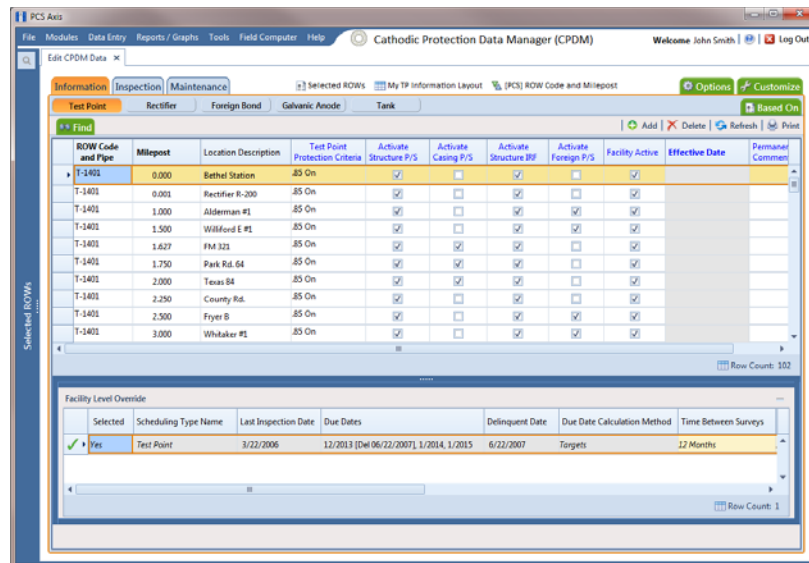
Figure 7-29. Test Point Information Grid

3 Open the *Information* grid for a facility type. For example, click the **Information** tab `Information` and then a facility type button, such as **Test Point** `Test Point`.

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Click ⊕ **Add** to open the *Add Record* dialog box. (Figure 7-30). You can also use the **F4** keyboard shortcut key after selecting the facility record.
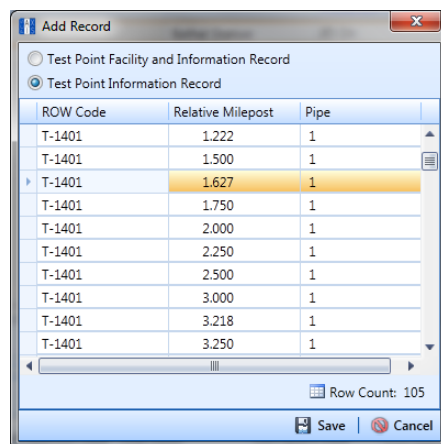
Figure 7-30. Add Record

6   Click the option **Test Point Information Record**.

7   Select a facility record in the *Add Record* dialog box that you want to create a history record. For example, the facility record with *Relative Milepost 1.627*.

8   Click 💾 **Save** to close the dialog box and return to the *Information* grid.

PCS Axis adds a new record in the *Information* grid for the selected facility with today's date showing in the *Effective Date* field. The *Facility Active* check box is also enabled by default in order for the facility to be included in facility survey schedules. The original record becomes the history record (Figure 7-31).
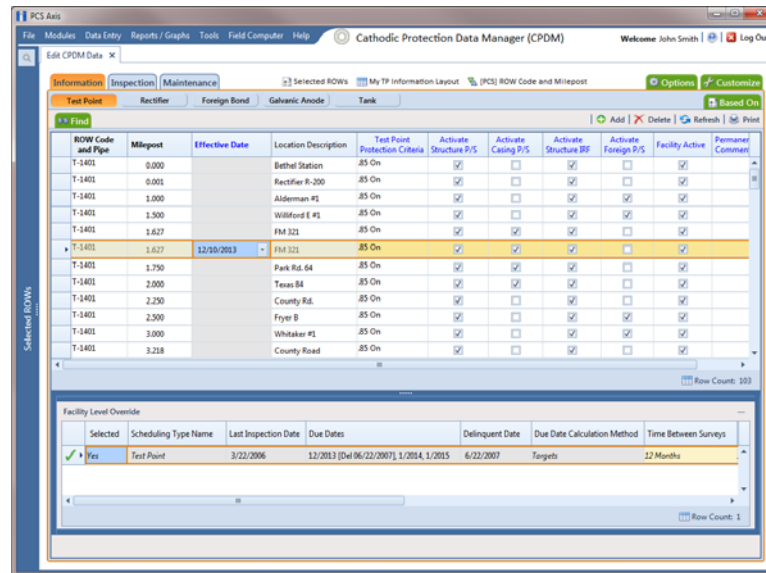
Figure 7-31. Test Point Information Grid

9   Change information in the new record as needed. For example, to document when the facility was taken out of service:

  •   Enter the out-of-service date in the *Effective Date* field (Figure 7-31).

  •   Click the *Facility Active* check box to remove the check mark and subsequently deactivate the facility.

  •   As a recommendation, enter a comment in the *Permanent Comments* field about the record change.

Viewing Records in a Grid

By default PCS Axis displays records in a data entry grid based on the selected ROW(s) and in alphanumeric order by *ROW Code and Pipe* and then *Milepost*. As an option you can choose to display records based on a route or schedule instead (Figure 7-32).

Topics in this section include those in the following list. Examples are based on the CPDM module, however the information applies to all PCS Axis modules.

- *Viewing Records Based on Selected ROWs* (page 250)

- *Viewing Records Based on a Route* (page 253)

- *Viewing Records Based on a Schedule* (page 257)

A status line near the top of the data entry grid identifies the mode for displaying records (by route, schedule, or selected ROWs); the currently selected layout and sort theme; and a filter icon indicating grid data is filtered. Hover the mouse over the filter icon to display a tool tip with a description for currently selected filters. For example, the filter *Active Facilities Only* is applied in the data grid shown in the following example (Figure 7-32).

Status Line

Figure 7-32. Status Line

Viewing Records Based on Selected ROWs

To display records in a data entry grid based on pipeline segments selected in the *Select ROWs* window, follow these steps:

1   Select one or more pipeline segments in the *Select ROWs* window (Figure 7-33). Select pipeline segments with facilities you want to work with, then click ⊟ **Save** to close the window.

Figure 7-33. Select ROWs

2   Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3   Select a data entry grid. For example, click the **Inspection** tab Inspection and then the **Test Point** button Test Point to display the *Test Point Inspection* data entry grid (Figure 7-34).

Figure 7-34. Test Point Inspection Grid

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Complete either **step a** or **b** to display records in the grid based on selected ROWs:

a Click the **Based On** tab ![Based On] to open the Based On panel (Figure 7-35) and then complete the following steps:

1) Click the option **Selected ROWs**, then click ![save icon] **Apply**.

2) Click ![X] **Close** to close the Based On panel.
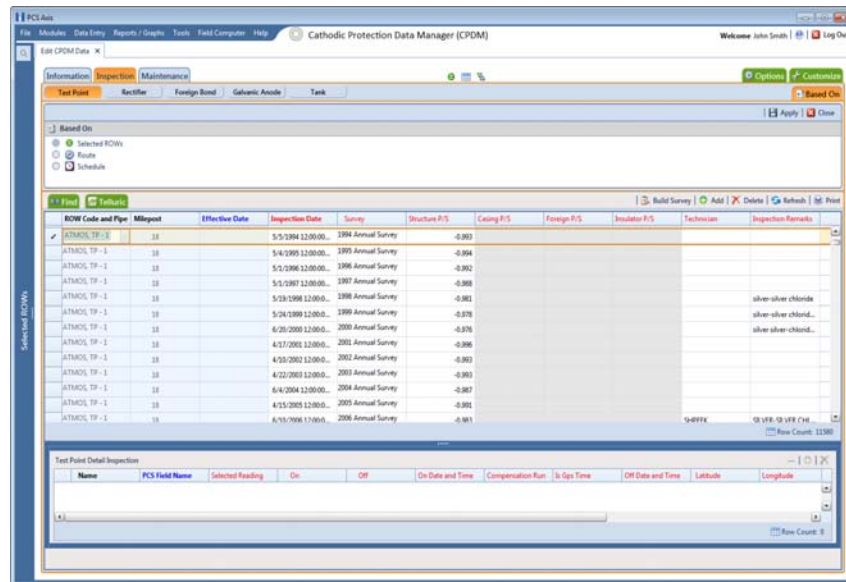
Figure 7-35. Based On Selected ROWs

b Click the **Options** tab ![Options] to open the options page. Then click the option **Selected ROWs** in the *Based On* group box (Figure 7-36).
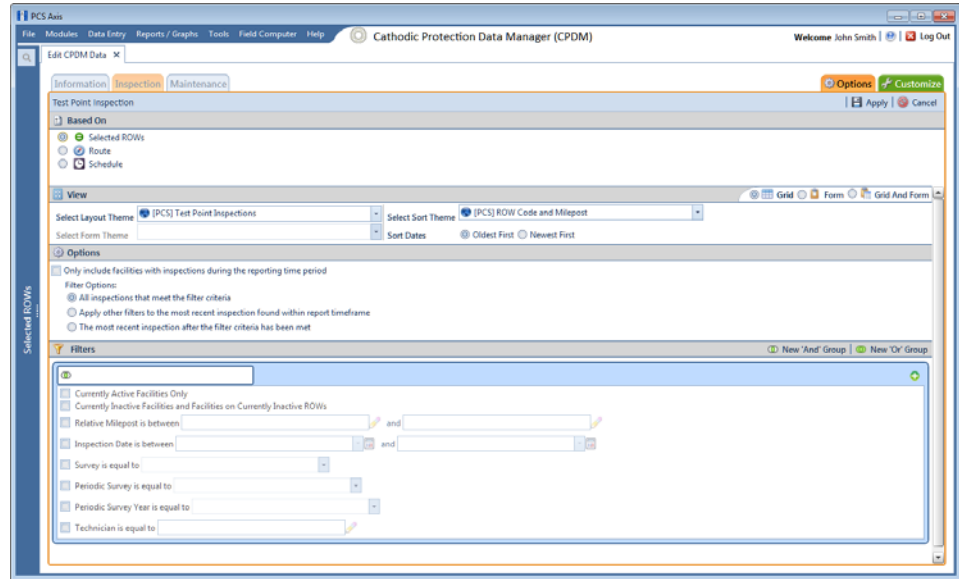
Figure 7-36. Based On Options

6 If you want to change the grid layout, sorting theme, or apply one or more filters to the grid, complete the following steps:

a To change the grid layout theme, click the down arrow in the field **Select Layout Theme** and select a theme in the selection list.

b To change the grid sorting method, click the down arrow in the field **Select Sort Theme** and select a theme in the selection list.

c To apply a filter to the grid, click the check box for a filter listed in the *Filters* group box (Figure 7-37). You can select more than one.
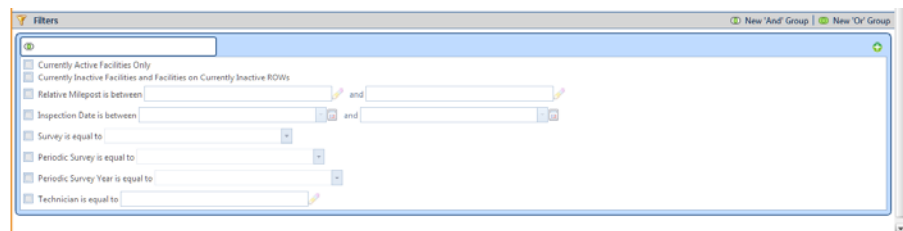
Figure 7-37. Filters Group Box

For example, to include only currently active facilities in the grid, click the **Currently Active Facilities Only** check box. A check mark inside the check box indicates a selection. To remove a filter from the grid, clear the check mark by clicking the check box.

> **NOTE:** To add a new *AND* or *OR* filter group, refer to *Adding an AND Filter Group* (page 324).

d When applying a date filter to the grid, such as *Inspection Date is between*, set a date range using a calendar or dynamic dates in the following manner:

    1) To set a date range using a calendar, click the down arrow in the start date field to open a calendar and select a date. Repeat this step for the end date field.

    2) To set a date range using dynamic start and end dates, click the [calculator icon] calculator button in the start date field and set up dynamic date properties. Repeat this step for the end date field. Clicking the calculator button opens and closes dynamic date property fields.

e Click [save icon] **Apply** to save and apply changes.

Records display in the grid based on selected options.

Viewing Records Based on a Route

Information in this section explains how to display records in a data entry grid based on a route. A route is a user-created list of facilities for inspection arranged in a particular order. For example, if a route has previously been set up with facilities arranged in survey order, you can work with records in a data entry grid using the same route to display the grid in survey order.

> **NOTE:** To perform the following procedure, one or more routes must first be set up. For information about how to set up a route, see *Using a Route* (page 381).

To view records in a grid based on a route, follow these steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-38). Select pipeline segments with facilities in a route, then click [save icon] **Save** to close the window.
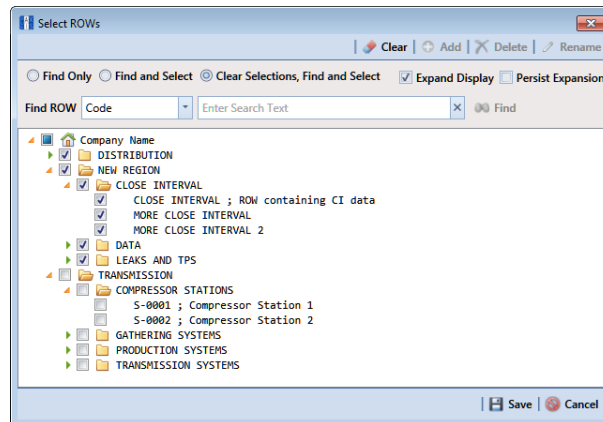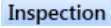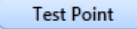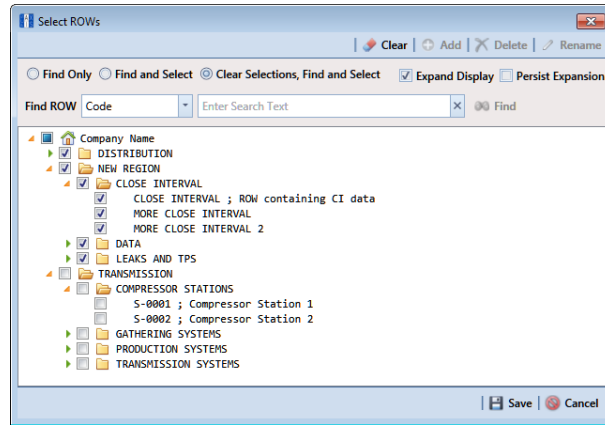
Figure 7-38. Select ROWs

2 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3 Select a data entry grid. For example, click the **Inspection** tab [Inspection] and then the **Test Point** button [Test Point] to display the *Test Point Inspection* data entry grid (Figure 7-39).
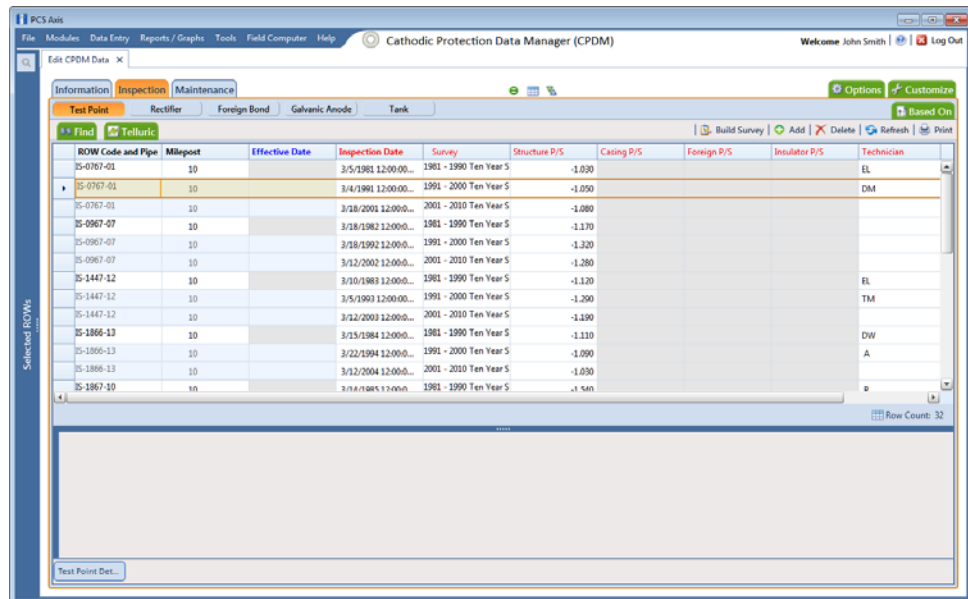
Figure 7-39. Test Point Inspection Grid

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Complete either **step a** or **b** to display records in the grid based on a route:

a Click the **Based On** tab to open the based on panel and then complete the following steps:

1) Click the **Route** option. Then select a route in the adjacent group box (Figure 7-40).
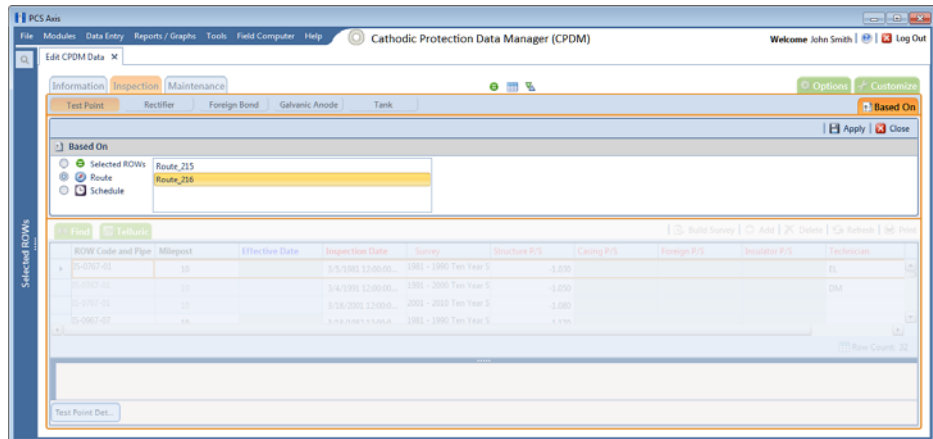
Figure 7-40. Based On Route

2) Click **Apply**, and then click **Close** to close the based on panel.

b Click the **Options** tab to open the options page and then complete the following steps:

1) Click the **Route** option. Then select a route in the adjacent group box (Figure 7-41).
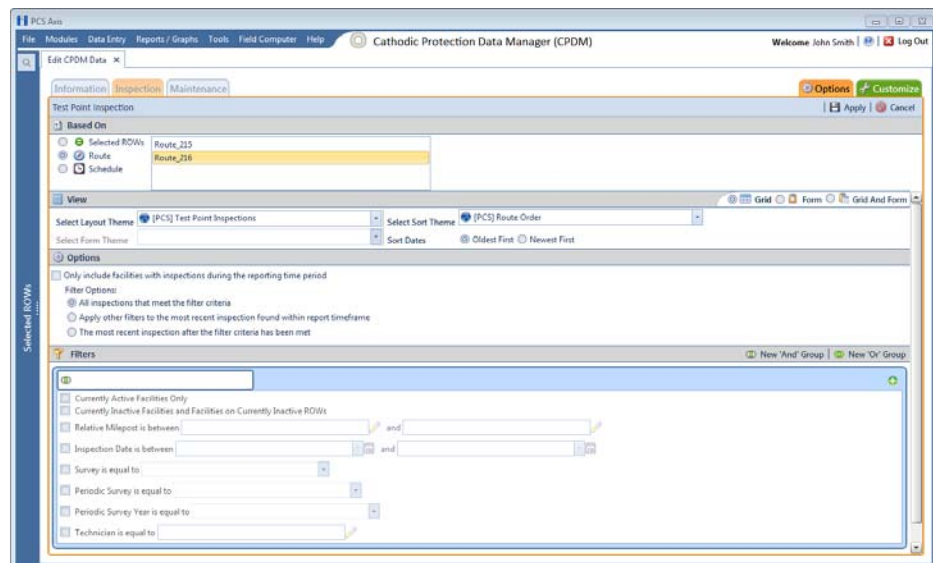
Figure 7-41. Based on Route

2) Click 💾 **Apply** to save and apply changes.

6 If you want to change the grid layout theme, sort theme, or apply one or more filters to the grid, complete the following steps:

a To change the grid layout theme, click the down arrow in the field **Select Layout Theme** and select a theme in the selection list (Figure 7-41).

b To change the grid sort theme, click the down arrow in the field **Select Sort Theme** and select a theme in the selection list.

c Select a method for sorting records in the data entry grid. Click **Oldest First** or **Newest First** in *Sort Dates* to sort records with the oldest or newest inspection dates first.

d To apply a filter to the grid, click the check box for a filter listed in the *Filters* group box.

For example, to only include active facilities in the grid, click the *Active Facilities Only* check box. A check mark inside the check box indicates a selection. To remove a filter from the grid, clear the check mark by clicking the check box.

NOTE: To add a new *AND* or *OR* filter group, refer to *Adding an AND Filter Group* (page 324).

e When applying a date filter to the grid, such as *Inspection Date is between*, set a date range using a calendar or dynamic dates in the following manner:

1) To set a date range using a calendar, click the down arrow in the start date field to open a calendar and select a date. Repeat this step for the end date field.

2) To set a date range using dynamic start and end dates, click the 🗓 calculator button in the start date field and set up dynamic date properties. Repeat this step for the end date field. Clicking the calculator button opens and closes dynamic date property fields.

f Click 💾 **Apply** to save and apply changes.

Records display in the grid based on selected options.

Viewing Records Based on a Schedule

Information in this section explains how to display records in a data entry grid based on a schedule. Examples are based on the CPDM module, however the information applies to all modules. Topics in this section include those in the following list:

- *Using the Based On Tab to View Records Based on a Schedule*

- *Using the Options Page to View Records Based on a Schedule* (page 260)

NOTE: Scheduling criteria must first be set up as well as a schedule definition to perform the procedure in this section. For more information see *Using a Schedule* (page 453).

Using the Based On Tab to View Records Based on a Schedule

Complete the following steps using the *Based On* tab to view records in a grid based on a schedule:

1   Select one or more pipeline segments in the *Select ROWs* window (Figure 7-42). Select pipeline segments with facilities included in a schedule, then click ⊞ **Save** to close the window.
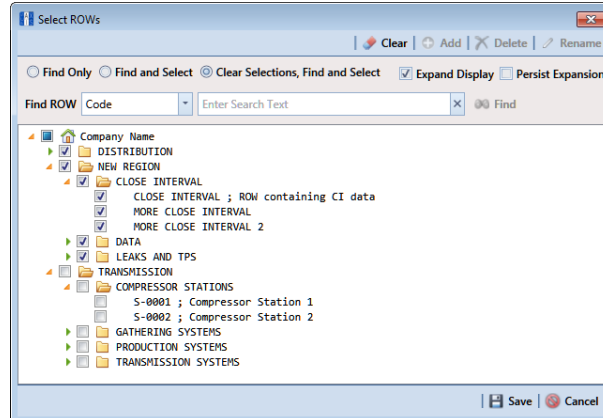
Figure 7-42. Select ROWs

2   Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window (Figure 7-43).
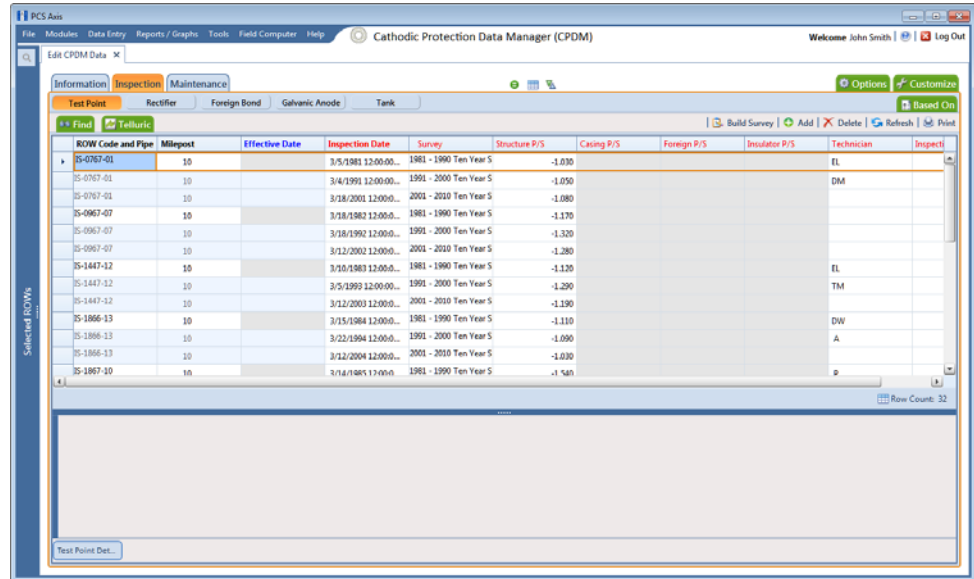
Figure 7-43. Test Point Inspection Grid

3   Select a data entry grid. For example, click the **Inspection** tab [Inspection] and then the **Test Point** button [Test Point] to display the *Test Point Inspection* data entry grid.

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5   Click the **Based On** tab [Based On] and then select **Schedule** (Figure 7-44).
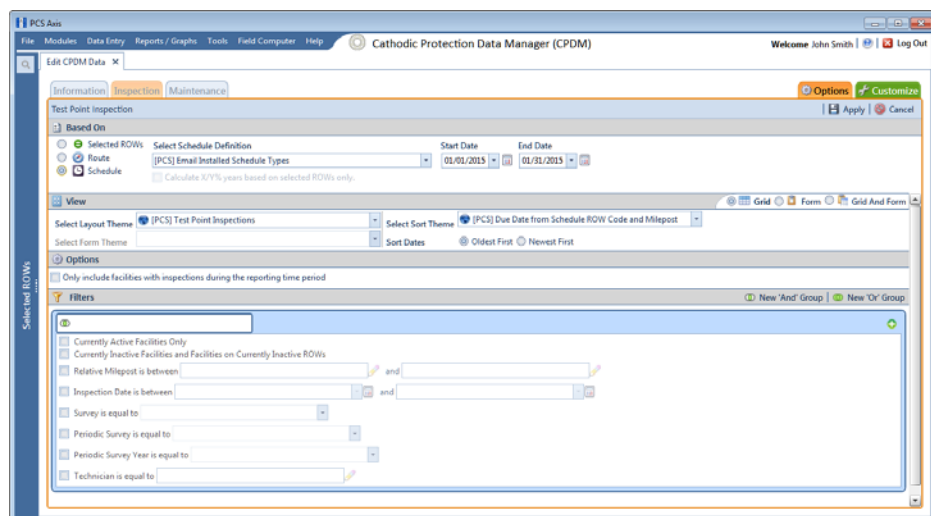
Figure 7-44. Based On Schedule

6   Select a schedule definition. Click the down arrow in the field **Select Schedule Definition** and select an item in the list.

Complete **step 7** to set up a schedule date range using a calendar or **step 8** to set up a schedule date range using dynamic dates.

7 To set up a schedule date range using a calendar:

a Set a schedule start date. Type a date in the **Start Date** field or click the down arrow and select a date using a calendar (Figure 7-45).
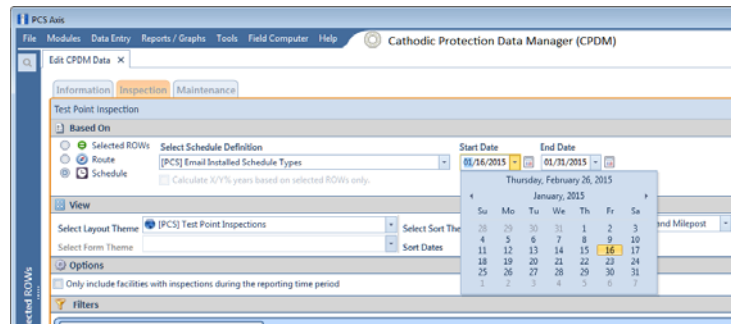
Figure 7-45. Start Date Field Calendar

b Set a schedule end date. Type a date in the **End Date** field or click the down arrow and select a date using a calendar.

NOTE: When typing a date, use the format MM/DD/YYYY to indicate the month, day, and year.

---

c Click ![save] **Apply** and then click ![close] **Close** to close the based on panel. Records display in the data entry grid based on the selected schedule definition and date range.

8 To set a schedule date range using dynamic start and end dates, follow these steps:

a Click the **Start Date** ![calculator] calculator to open dynamic start date fields. Set properties in these fields in the following manner:

1) Click the down arrow in the **Start Date** field (Figure 7-46) and select one of the following options: *Today*, *End Of Month*, *Beginning Of Year*, or *End Of Year*.
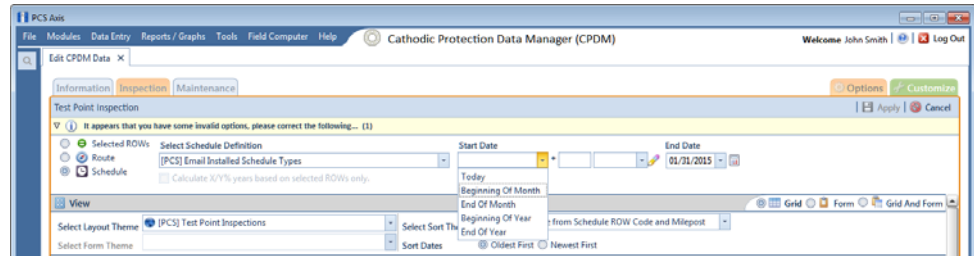
Figure 7-46. Start Date Options

2) In the remaining two fields, type an offset value in the first field and then click the down arrow in the second field and select one of the following options: *Day(s)*, *Month(s)*, or *Year(s)*. Click the ✏ pencil button to close dynamic start date fields.

b Click the **End Date** ▦ calculator to open dynamic end date fields. Set properties in these fields in the following manner:

1) Click the down arrow in the **End Date** field and select one of the following options: *Today*, *End Of Month*, *Beginning Of Year*, or *End Of Year*.

2) In the remaining two fields, type an offset value in the first field and then click the down arrow in the second field and select one of the following options: *Day(s)*, *Month(s)*, or *Year(s)*. Click the ✏ pencil button to close dynamic end date fields.

c Click 💾 **Apply** and then click ❌ **Close** to close the based on panel. Records display in the data entry grid based on the selected schedule definition and dynamic date range.

### *Using the Options Page to View Records Based on a Schedule*
Complete the following steps using the *Options* page to view records in a grid based on a schedule:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-47). Select pipeline segments with facilities included in a schedule, then click 💾 **Save** to close the window.
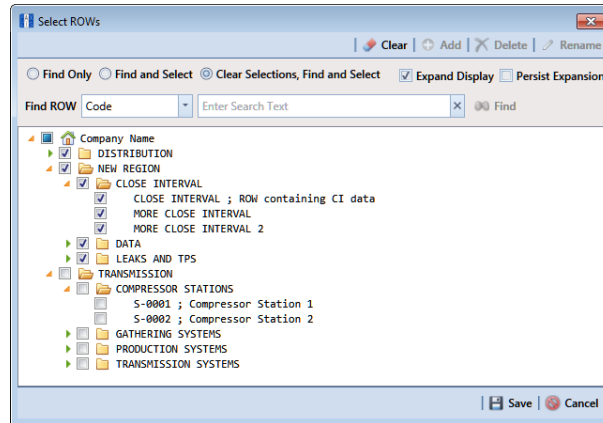
Figure 7-47. Select ROWs

2   Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window (Figure 7-48).
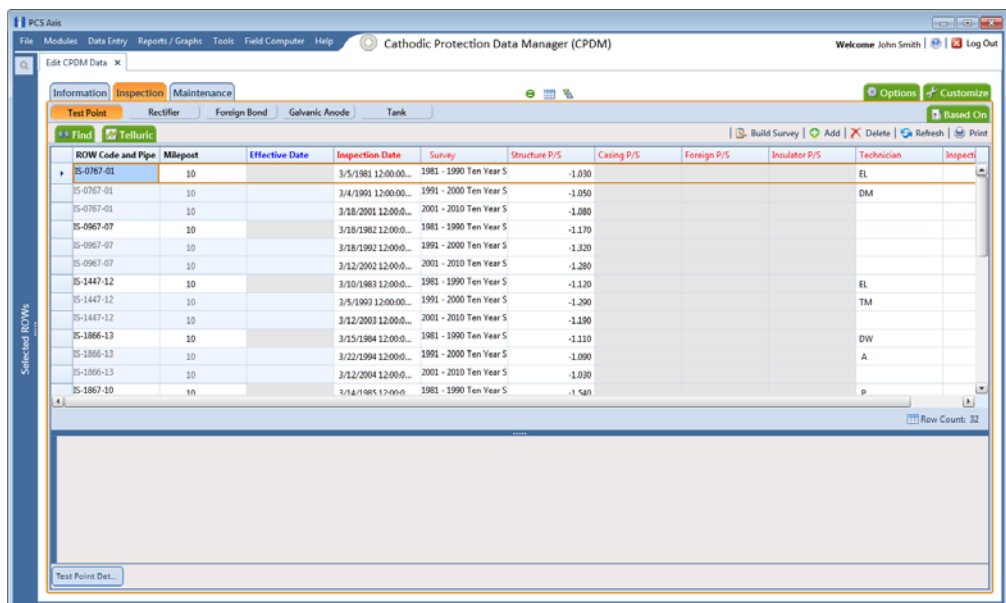
Figure 7-48. Test Point Inspection Grid

3   Select a data entry grid. For example, click the **Inspection** tab `Inspection` and then the **Test Point** button `Test Point` to display the *Test Point Inspection* data entry grid.

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Click the **Options** tab [Options] to open the options page and then select **Schedule** (Figure 7-44).
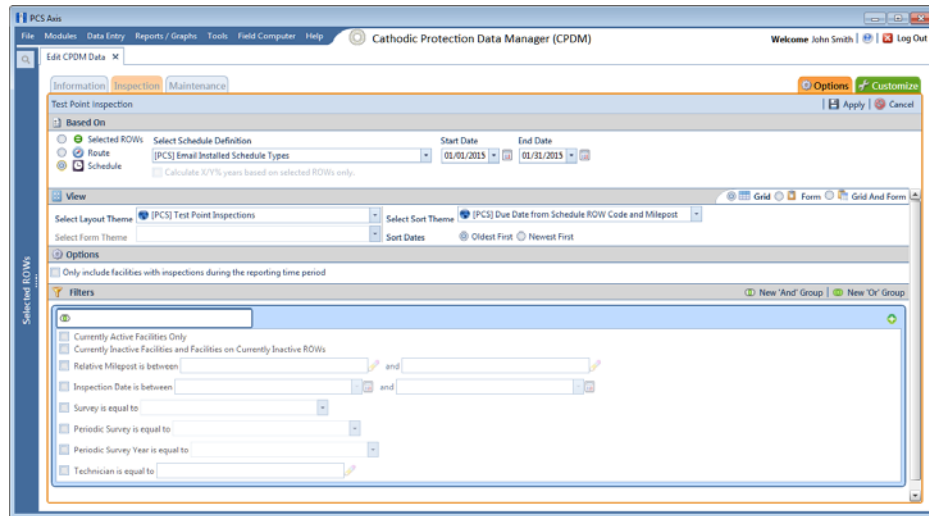
Figure 7-49. Based On Schedule

6 Click the down arrow in the **Select Schedule Definition** field and select an item in the list.

Complete either **step 7** to set up a schedule date range using a calendar or **step 8** to set up a schedule date range using dynamic dates.

7 To set up a schedule date range using a calendar:

    a Set a schedule start date. Click the down arrow in the **Start Date** field and select a date in the calendar.

    b Set a schedule end date. Click the down arrow in the **End Date** field and select a date in the calendar.

    c If you want to set additional property settings in the options page, continue with **step 9**. Otherwise, click [save icon] **Apply** to apply changes and return to the data entry grid.

8   To set a schedule date range using dynamic start and end dates, follow these steps:

    a   Click the **Start Date** 🖩 calculator to open dynamic start date fields. Set properties in these fields in the following manner:

        1)   Click the down arrow in the **Start Date** field and select one of the following options: *Today*, *End Of Month*, *Beginning Of Year*, or *End Of Year*.

        2)   In the remaining two fields, type an offset value in the first field and then click the down arrow in the second field and select one of the following options: *Day(s)*, *Month(s)*, or *Year(s)*. Click the 🖊 pencil button to close dynamic start date fields.

    b   Click the **End Date** 🖩 calculator to open dynamic end date fields. Set properties in these fields in the following manner:

        1)   Click the down arrow in the **End Date** field and select one of the following options: *Today*, *End Of Month*, *Beginning Of Year*, or *End Of Year*.

        2)   In the remaining two fields, type an offset value in the first field and then click the down arrow in the second field and select one of the following options: *Day(s)*, *Month(s)*, or *Year(s)*. Click the 🖊 pencil button to close dynamic end date fields.

    c   If you want to set additional property settings in the options page, continue with **step 9**. Otherwise, click 💾 **Apply** to apply changes and return to the data entry grid.

9   To change the grid layout, sorting method, or apply one or more filters to the grid, follow these steps:

    a   To change the grid layout theme, click the down arrow in the field **Select Layout Theme** and select a layout theme in the selection list.

    b   To change the grid sorting method, click the down arrow in the field **Select Sort Theme** and select a sorting theme in the selection list.

    c   To apply a filter to the grid, click the check box for a filter listed in the *Filters* group box.

        For example, to only include active facilities in the grid, click the *Active Facilities Only* check box. A check mark inside the check box indicates a selection. To remove a filter from the grid, clear the check mark by clicking the check box.

> **NOTE:** For more information related to filters (*New 'And' Group* or *New 'Or' Group*), refer to *Adding an AND Filter Group* (page 324).

d When applying a date filter to the grid, such as *Inspection Date is between*, set a date range using a calendar or dynamic dates in the following manner:

1) To set a date range using a calendar, click the down arrow in the start date field to open a calendar and select a date. Repeat this step for the end date field.

2) To set a date range using dynamic start and end dates, click the calculator button in the start date field and set up dynamic date properties. Repeat this step for the end date field. Clicking the calculator button opens and closes dynamic date property fields.

e Click **Apply** to apply changes and return to the data entry grid

Records display in the grid based on selected options.

Filtering Data in a Grid
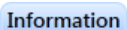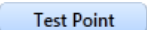
Information in this section explains how to filter the data output in any data entry grid in *Edit <module> Data, such as Edit CPDM Data*. It includes a description of the options and filters available in the *Options* page when working with the *Information*, *Inspection*, and *Maintenance* grids. Filtering data allows you to work with only those records you are interested seeing in the grid.

Topics in this section include those in the following list:

- *Filtering Data in the Information Grid*

- *Filtering Data in the Inspection Grid* (page 265)

- *Filtering Data in the Maintenance Grid* (page 268)

Filtering Data in the Information Grid

To filter the data output in the *Information* grid of *Edit <module> Data*, complete the following steps. The placeholder *<module>* refers to any module, such as *Edit CPDM Data*.

1 Click **Data Entry** > **Edit <module> Data**.

2 Open the *Information* grid for a facility type. For example, click the **Information** tab Information and then a facility type button, such as **Test Point** Test Point.

3 Click the **Options** tab [Options] to open the *Options* page (Figure 7-50).
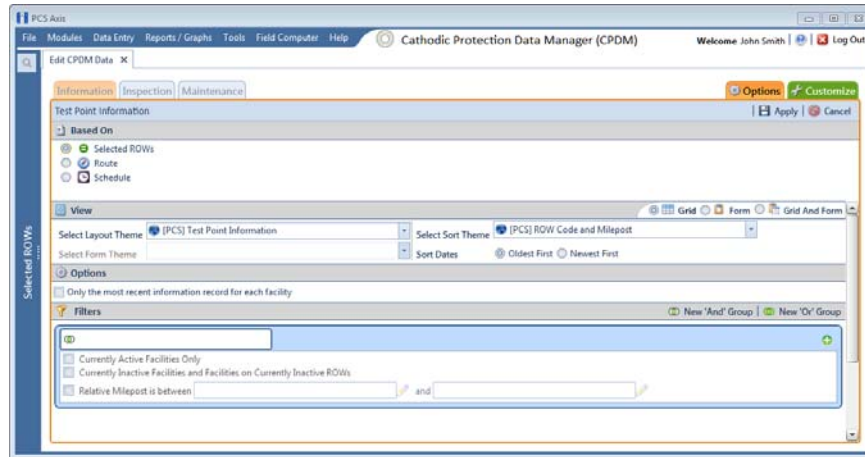
Figure 7-50. Options/Information Grid

4 To include only the most recent information record, select the check box **Only the most recent information record for each facility**. This option uses the *Effective Date* to filter the data output.
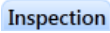
NOTE: When using the *Filters* group box to apply additional filters to the data output, the most recent information record is found first, and then all other filters are applied to the data output. For more information about filters, see *Adding an AND Filter Group* (page 324) and *Adding an OR Filter Group* (page 327).

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5 Click [icon] **Apply** to save and apply changes and then return to the *Information* grid. To cancel changes, click the **Options** tab [Options] to return to the grid.

Filtering Data in the Inspection Grid

To filter the data output in the *Inspection* grid of *Edit <module> Data*, complete the following steps. The placeholder *<module>* refers to any module, such as *Edit CPDM Data*.

1 Click **Data Entry** > **Edit <module> Data**.

2 Open the *Inspection* grid for a facility type. For example, click the **Inspection** tab [Inspection] and then a facility type button, such as **Test Point** [Test Point].

3 Click the **Options** tab [Options] to open the *Options* page (Figure 7-51).
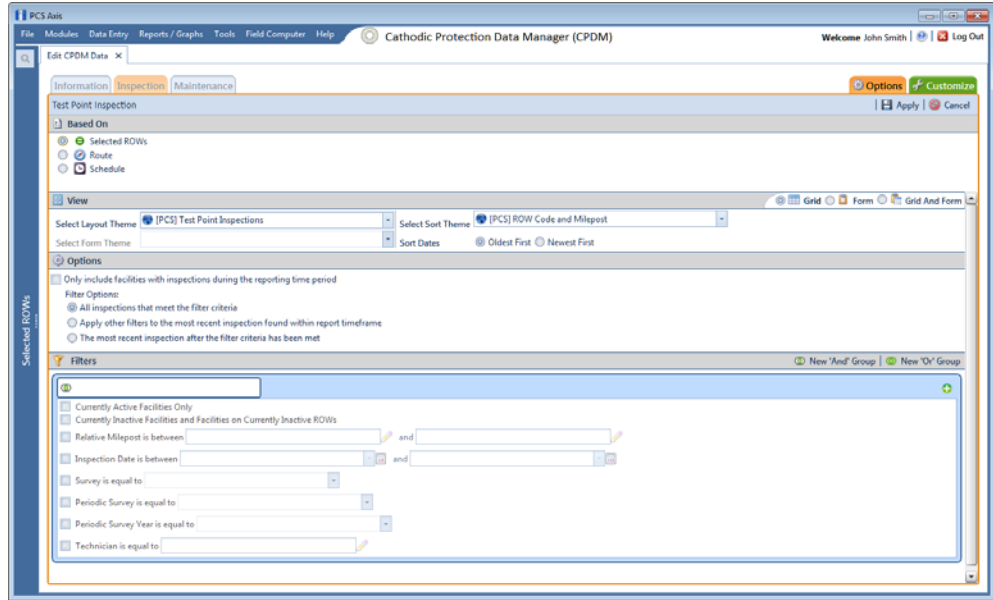
Figure 7-51. Options/Inspection Grid

4 Review the following descriptions and then select one or more filter options as required:

- *Only include facilities with inspections during the reporting time period*: The data output for this option only includes those inspection records that meet the filter criteria defined for a particular date or date range. Filter criteria is defined by filter settings in the *Filters* group box for any of the following time period fields: *Inspection Date is between*, *Survey is equal to*, *Periodic Survey is equal to*, and *Periodic Survey Year is equal to*.

- *All inspections that meet the filter criteria*:This option includes all inspection records in the data output that meet filter criteria based on filter settings in the *Filters* group box.

- *Apply other filters to the most recent inspection found within the report timeframe*:This option finds the most recent inspection record within the reporting time frame first, and then applies other filter settings to the data output. Filter criteria for both of these are defined in the *Filters* group box. Use any of the following fields when defining filter criteria for the reporting time frame: *Inspection Date*, *Survey*, *Periodic Survey*, and *Periodic Survey Year*.

- *The most recent inspection after the filter criteria has been met*:The data output for this option includes the most recent inspection record only for those facilities that meet all other filter criteria first. Filter criteria for both of these are defined in the *Filters* group box. Use any of the following fields when defining a time period for the most recent maintenance record: *Inspection Date*, *Survey*, *Periodic Survey*, and *Periodic Survey Year*.

5 When applying a time period filter to the grid, such as *Inspection Date is between*, set a date range using a calendar or dynamic dates in the following manner:

- To set a date range using a calendar, click the down arrow in the start date field to open a calendar and select a date. Repeat this step for the end date field.

- To set a date range using dynamic start and end dates, click the ⊞ calculator button in the start date field and set up dynamic date properties. Repeat this step for the end date field. Clicking the calculator button opens and closes dynamic date property fields.

6 Click 💾 **Apply** to save and apply changes and then return to the *Inspection* grid. To cancel changes, click 🚫 **Cancel** or the **Options** tab ⚙ Options to return to the grid.

NOTE: For more information about filters, see *Working with Themes and Filter Groups* (page 316).


Filtering Data in the Maintenance Grid

To filter the data output in the *Maintenance* grid of *Edit <module> Data*, complete the following steps. The placeholder *<module>* refers to any module, such as *Edit CPDM Data*.

1   Click **Data Entry** > **Edit <module> Data**.

2   Open the *Maintenance* grid for a facility type. For example, click the **Maintenance** tab `Maintenance` and then a facility type button, such as **Test Point** `Test Point`.

3   Click the **Options** tab `Options` to open the *Options* page (Figure 7-52).
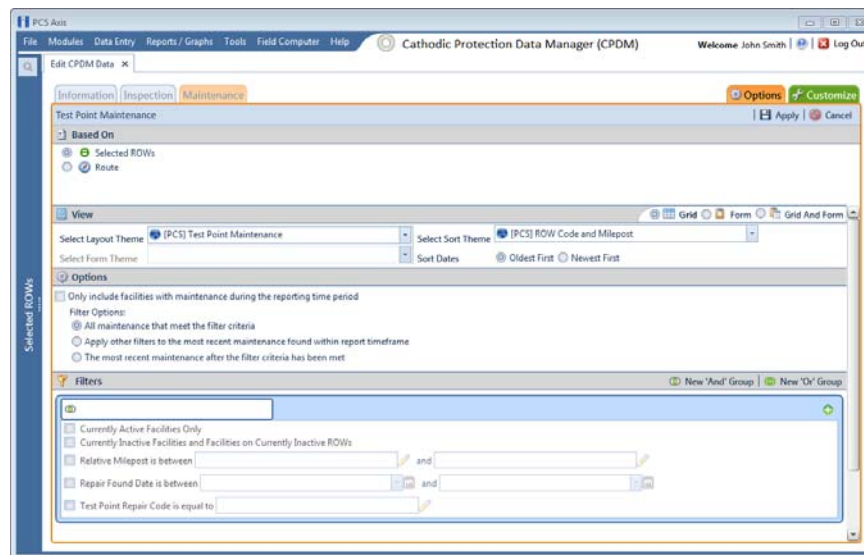
Figure 7-52. Options/Maintenance Grid

4   Review the following descriptions and then select one or more filter options as required:

- *Only include facilities with maintenance during the reporting time period*: The data output for this option only includes those maintenance records that meet the filter criteria defined for a particular date or date range. Filter criteria is defined by filter settings in the *Filters* group box for any of the following time period fields: *Effective Date*, *Repair Found Date*, *Repair Initiated Date*, and *Repair Corrected Date*.

- *All maintenance that meet the filter criteria*: This option includes all maintenance records in the data output that meet filter criteria based on filter settings in the *Filters* group box.

- *Apply other filters to the most recent maintenance found within the report timeframe*: This option finds the most recent maintenance record within the reporting time frame first, and then applies other filter settings to the data output. Filter criteria for both of these are defined in the *Filters* group box. Use any of the following fields when defining filter criteria for the reporting time frame: *Effective Date*, *Repair Found*, *Repair Initiated*, and *Repair Complete*.

- *The most recent maintenance after the filter criteria has been met*: The data output for this option includes the most recent maintenance record only for those pipeline records that meet all other filter criteria first. Filter criteria for both of these are defined in the *Filters* group box. Use any of the following fields when defining a time period for the most recent maintenance record: *Effective Date*, *Repair Found*, *Repair Initiated*, and *Repair Complete*.

5 Click 🖫 **Apply** to save and apply changes and then return to the *Maintenance* grid. To cancel changes, click 🚫 **Cancel** or the **Options** tab ⚙ Options to return to the grid.


NOTE: For more information about filters, see *Working with Themes and Filter Groups* (page 316).

Building a Survey in the Inspection Grid

Building a survey in the inspection grid based on a schedule allows PCS Axis to automatically add empty inspection records in the grid ready for data entry. This feature saves time by eliminating the need to manually add empty inspection records in the grid, one-by-one.

To build a survey in the *Inspection* grid based on a schedule, follow these steps:

1   Select one or more pipeline segments in the *Select ROWs* window (Figure 7-53). Select pipeline segments with facilities you want to work with, then click 🖫 **Save** to close the window.
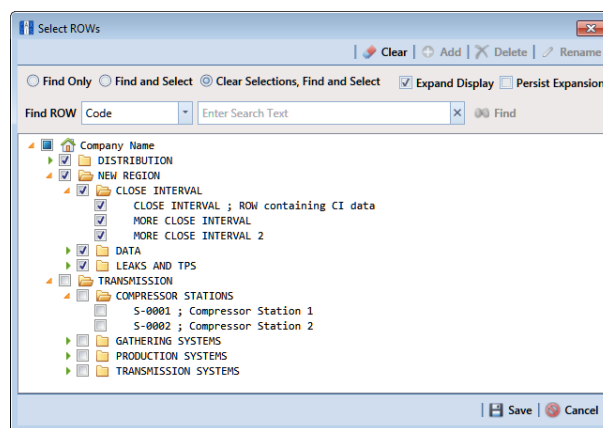
Figure 7-53. Select ROWs

2 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window (Figure 7-54).
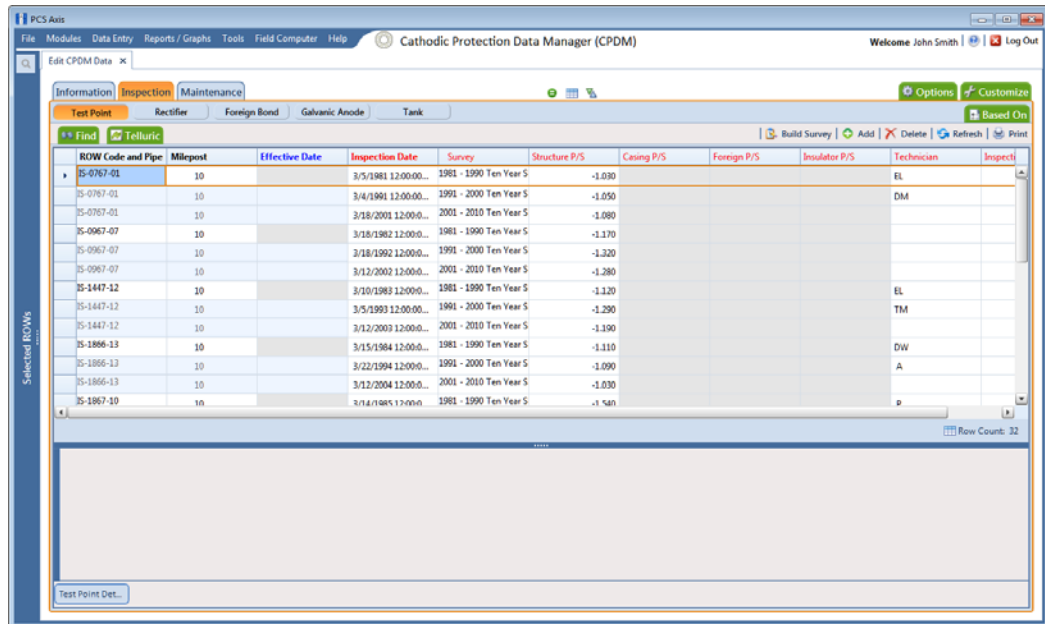
Figure 7-54. Test Point Inspection Grid

3 Select the *Inspection* data entry grid for a facility type. For example, click the **Inspection** tab Inspection and then the **Test Point** button Test Point to display the *Test Point Inspection* data entry grid.

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Click the **Based On** tab [Based On] to open the based on panel. Then select the **Schedule** option (Figure 7-55).
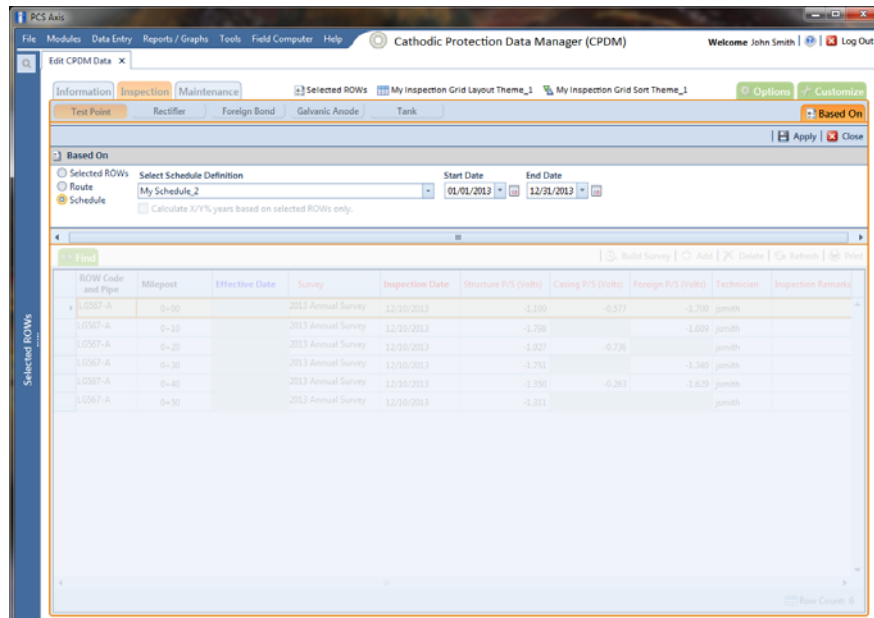
Figure 7-55. Based On Schedule Option

6 Select a schedule definition. Click the down arrow in the field **Select Schedule Definition** and select an item in the list.

Complete **step 7** to set up a schedule date range using a calendar or **step 8** to set up a schedule date range using dynamic dates.

7 To set up a schedule date range using a calendar:

a Set a schedule start date. Click the down arrow in the **Start Date** field and select a date in the calendar.

b Set a schedule end date. Click the down arrow in the **End Date** field and select a date in the calendar.

c Click [icon] **Apply** to apply changes and display the data entry grid. To hide the based on panel, click [X] **Close** or click the **Based On** [Based On] tab. Continue with **step 9**.

8 To set a schedule date range using dynamic start and end dates, follow these steps:

a Click the **Start Date** [icon] calculator to open dynamic start date fields (Figure 7-56).
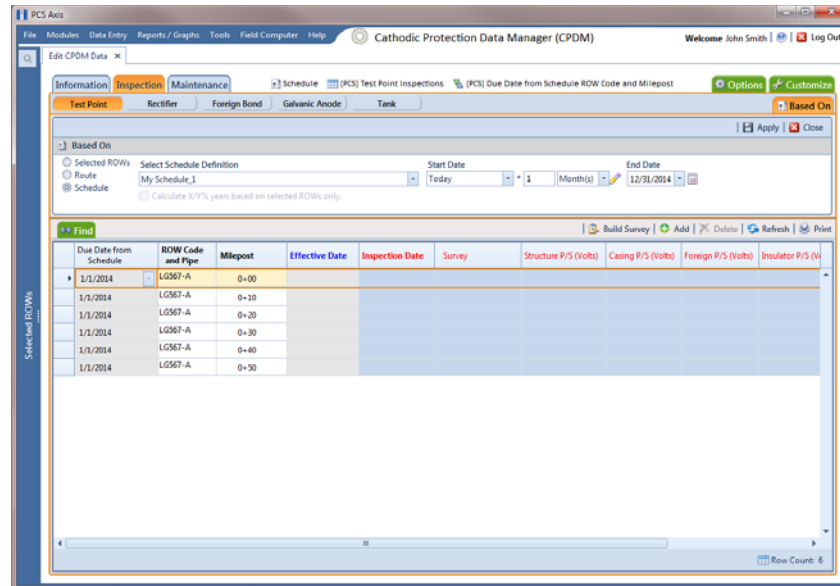
Figure 7-56. Based On Schedule

b Set properties in these fields in the following manner:

1) Click the down arrow in the **Start Date** field and select one of the following options: *Today*, *End Of Month*, *Beginning Of Year*, or *End Of Year*.

2) In the remaining two fields, type an offset value in the first field and then click the down arrow in the second field and select one of the following options: *Day(s)*, *Month(s)*, or *Year(s)*. Click the 🖊 pencil button to close dynamic start date fields.

c Click the **End Date** 🔢 calculator to open dynamic end date fields. Set properties in these fields in the following manner:

1) Click the down arrow in the **End Date** field and select one of the following options: *Today*, *End Of Month*, *Beginning Of Year*, or *End Of Year*.

2) In the remaining two fields, type an offset value in the first field and then click the down arrow in the second field and select one of the following options: *Day(s)*, *Month(s)*, or *Year(s)*. Click the 🖊 pencil button to close dynamic end date fields.

d Click 💾 **Apply** to apply changes and display the data entry grid. To hide the based on panel, click ❌ **Close** or click the **Based On** [Based On] tab. Continue with **step 9**.

9 Click 🔖 **Build Survey** to open the *Build Survey* dialog box (Figure 7-57).
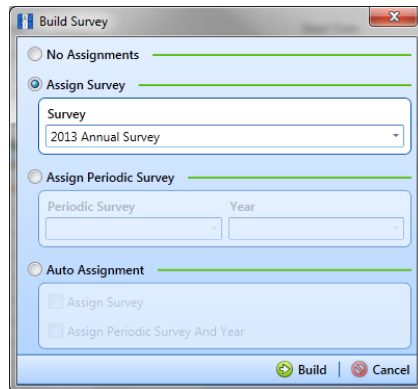
Figure 7-57. Build Survey

10 Select one of the following options in the *Build Survey* dialog box to assign inspection records to a survey folder:

- *No Assignments*: Select this option if you do not want to assign inspection records to a survey folder.

- *Assign Survey*: Select this option to assign inspection records to an annual or multi-year survey folder. Then click the down arrow in the **Survey** field and select a survey folder in the selection list.

- *Assign Periodic Survey*: Select this option to assign inspection records to a periodic survey. Click the down arrow in the **Periodic Survey** field and select a survey folder in the selection list. Then click the down arrow in the **Year** field and select the survey year.

- *Auto Assignment*: Select this option and then click either **Assign Survey** or **Assign Periodic Survey and Year** to have PCS Axis automatically assign inspection readings to a survey folder based on the schedule date range.

11 Click ⊕ **Build**. Then click **OK** when the *Build Survey* message displays "*Build Survey Completed.*"

The data entry grid now includes blank inspection records ready for data entry.

Using Find to Search a Data Entry Grid

To search the content of a data entry grid, follow these steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-58). Select pipeline segments with facilities you want to work with, then click 💾 **Save** to close the window.
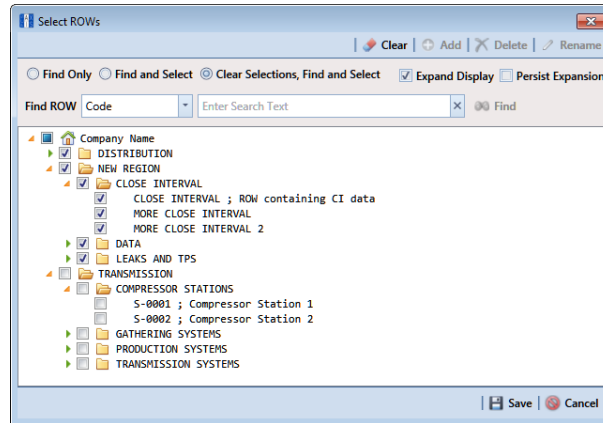
Figure 7-58. Select ROWs

2 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3 Select a data entry grid. For example, click the **Inspection** tab `Inspection` and then the **Test Point** button `Test Point` to display the *Test Point Inspection* data entry grid.

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Click the **Find** tab `Find` to open the search properties panel (Figure 7-59).
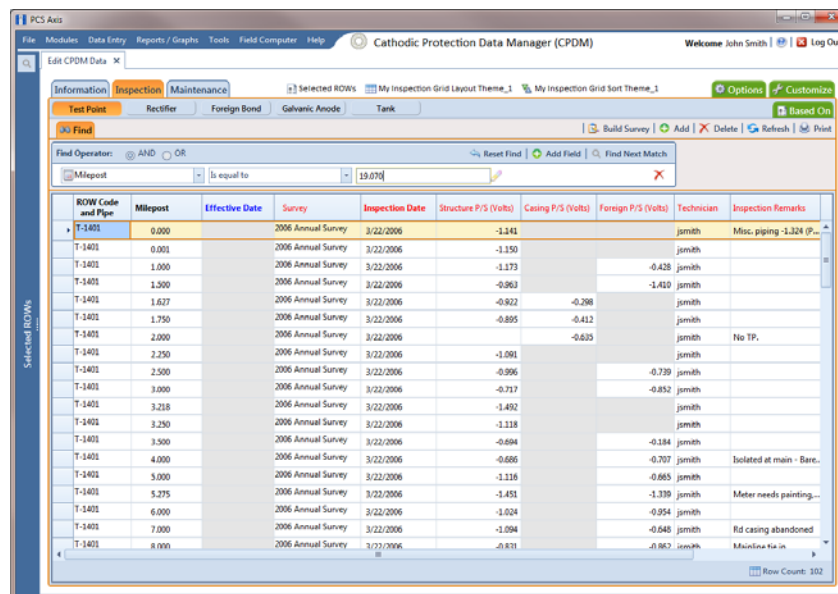
Figure 7-59. Find

6 Select a *Find Operator* option. If you want search results to meet *all* search criteria, select the **AND** operator. If you want search results to meet *any* search criteria, select the **OR** operator.

7 Set up search criteria. Select a PCS Axis field, operator, and value using the selection fields. To add another row of selection fields, click ⊕ **Add Field** and then select a PCS Axis field, operator and a value using the added row of selection fields.

8 Click 🔍 **Find Next Match** to search the grid. Click the button again to find the next match.

9 Click ↩ **Reset Find** to clear and reset search selection fields. If you want to search for another item in the data entry grid, repeat **step 6** through **step 8**.

10 Click the **Find** tab 🔍 Find to close the search properties panel.

Printing, Exporting, or Emailing Grid Content

The following information explains how to print and export a report with content in a data entry grid. Supported file formats for exporting a report include PDF, HTML, MHT, RTF, XLS, XLSX, CSV, TXT, and Image (BMP, EMF, WMF, GIF, JPEG, PNG, and TIFF).

Complete the following steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-60). Select pipeline segments with facilities you want to work with, then click 💾 **Save** to close the window.
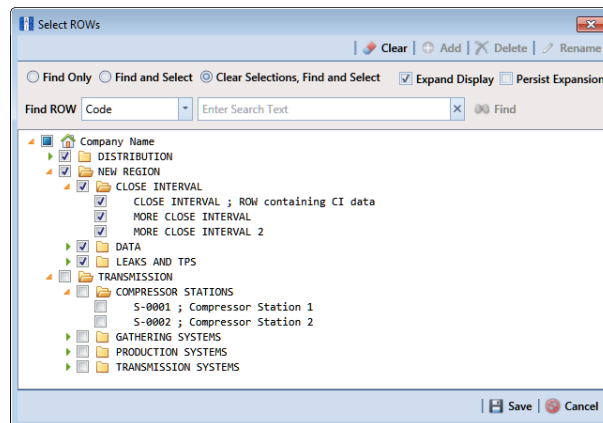
Figure 7-60. Select ROWs

2   Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window (Figure 7-61).

Figure 7-61. Test Point Inspection Grid

3   Select a data entry grid. For example, click the **Inspection** tab `Inspection` and then the **Test Point** button `Test Point` to display the *Test Point Inspection* data entry grid.

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5   Click 🖶 **Print** to open a print preview window (Figure 7-62).

Figure 7-62. Print Preview

6 To print the report using the default Windows printer, click the 🖨 **Quick Print** button.

7 To open a print dialog box and select a printer to print the report, click the 🖨 **Print** button.

8 To select a file format and export the report, follow these steps:

a Click the down arrow in 💾▾ **Export Document** and select a file format in the selection list.

b When the *Options* dialog box opens, set up optional property settings and then click **OK** to close the dialog box.

c When the *Save As* dialog box opens, type a name for the report in the **File name** field and then navigate to a location on your computer to save the report.

d Click **Save**. When the message *Do you want to open this file* displays, click **Yes** or **No**.

9   To select a file format and send the report as an attachment in an email, follow these steps:

    a   Click the down arrow in [icon] ▾ **Send via E-mail** and select a file format in the selection list.

    b   When the *Options* dialog box opens, set up optional property settings and then click **OK** to close the dialog box.

    c   When the *Save As* dialog box opens, type a name for the report in the **File name** field and then navigate to location on your computer to save the report.

    d   When an email message opens with the report as an attachment, select an email recipient and then click **Send**.

10   Click the [icon] **Exit** button to close the print preview window and return to the data entry grid.

Working with Data Entry Forms

A data entry form (also referred to as "form") provides a single record view of facility information. All fields related to a single facility record display in one page of a form. Using this feature allows you to display large amounts of information and data entry fields for one facility record on one form page.

A PCS Axis form typically resembles a familiar paper-based form used by field technicians or data entry personnel. It can also be used as an inspection report or a compliance report when the selected *Form Theme* includes the appropriate PCS Axis fields. For example, a field technician can use a form to enter survey data when inspecting points along a pipeline segment.

IMPORTANT: Using a data entry form in PCS Axis requires that the form be created and designed in PCS v7.5 or higher and then imported in PCS Axis. Creating and designing forms in PCS Axis is not currently supported but will be in a future software release. Importing a form in PCS Axis requires the assistance of PCS Technical Services. Contact information for PCS Technical Services is available in the section entitled *Technical Support* (page 25).

Other topics related to forms in PCS Axis include those in the following list:

- *Viewing a Form or Grid and Form* (page 280)

- *Navigating a Form or Grid and Form* (page 282)

- *Arranging a Grid and Form* (page 283)

Viewing a Form or Grid and Form

Information in this section explains how to view a form by selecting the option labeled *Form* or *Grid And Form* in the *Options* page of a data entry grid.

To view a form, follow these steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-63). Select pipeline segment(s) with facilities you want to view in a form. Click ⊞ **Save** to close the window.
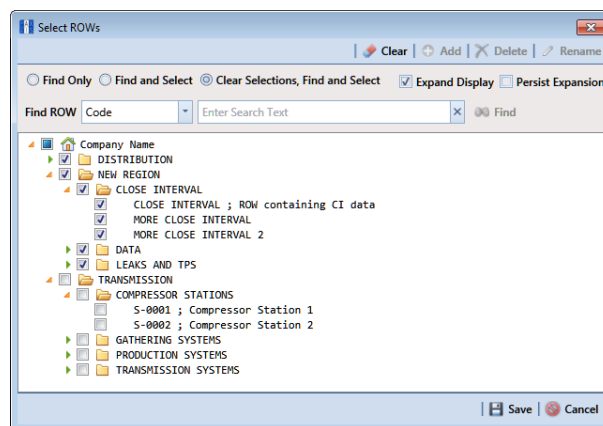
Figure 7-63. Select ROWs

2 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3 Open the *Inspection* grid for a facility type. For example, click the **Inspection** tab and then a facility type button, such as **Test Point** (Figure 7-64).
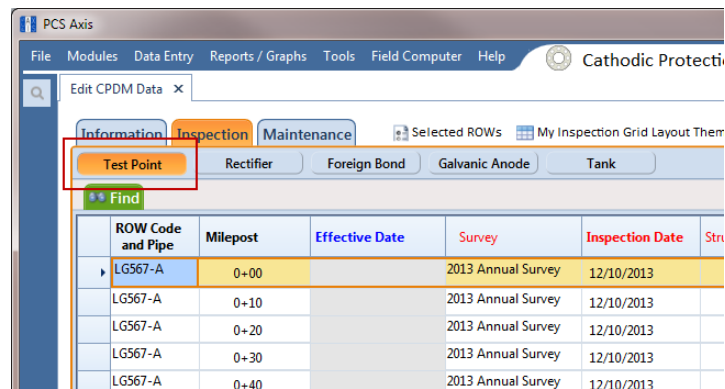
Figure 7-64. Test Point Tab

4   Click the **Options** tab ⚙ Options to open the options page (Figure 7-65). In the *View* group box, click the option labeled 📋 **Form** or 📊 **Grid And Form** and then click **Apply**.
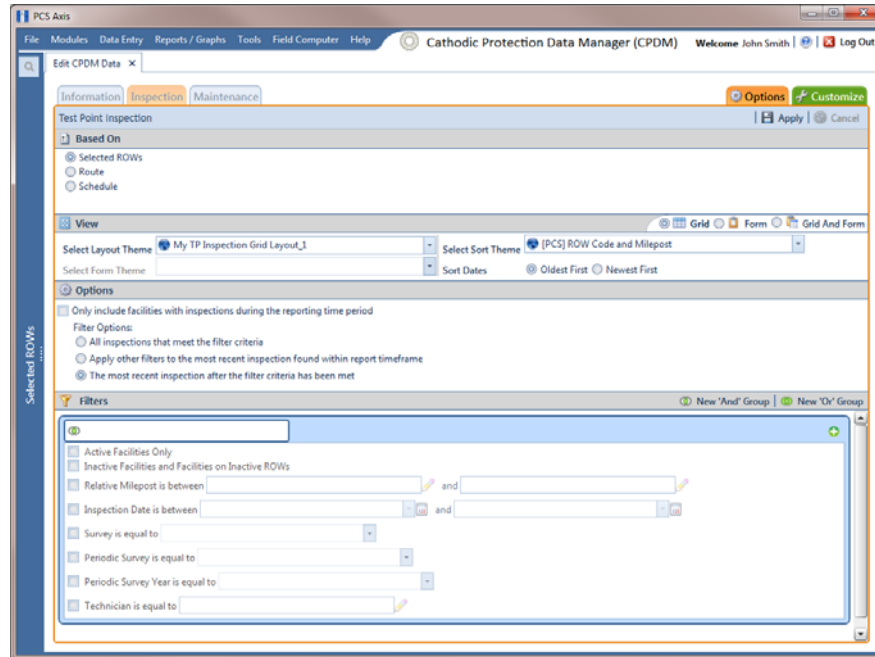
Figure 7-65. Options

Based on your selection earlier, a form or grid and form display after clicking *Apply*. The following figure shows an example of a grid and form (Figure 7-66).
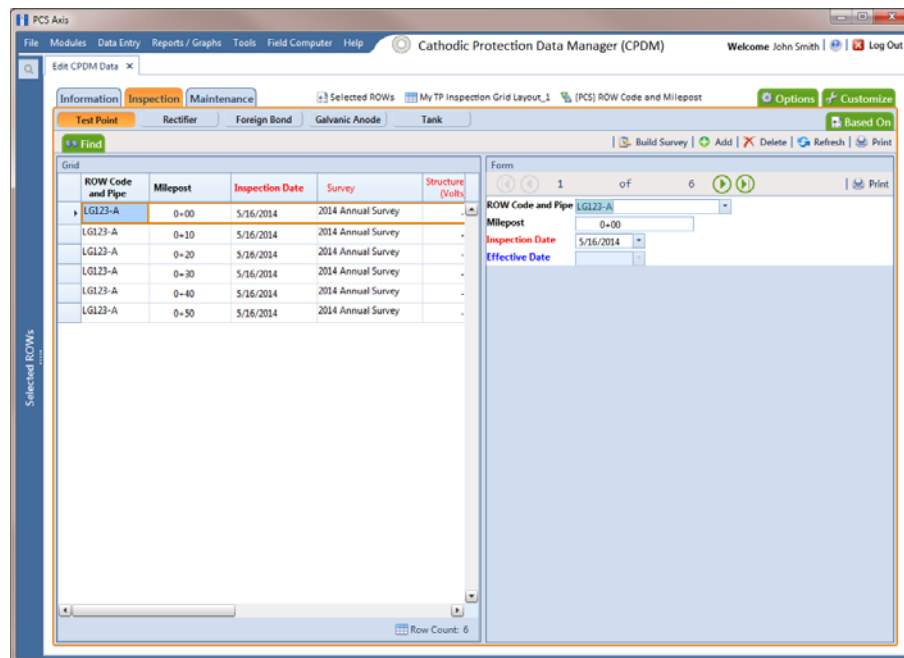
Figure 7-66. Grid and Form

Navigating a Form or Grid and Form

PCS Axis displays data in a grid and form at the same time. The grid and form synchronize when browsing records or entering data in a record. When editing a record in a grid, the same record displays and updates in the form. The same is true for the grid when editing a record in a form. In the following example, the facility record for milepost 0+20 is selected in both the grid and form (Figure 7-67).
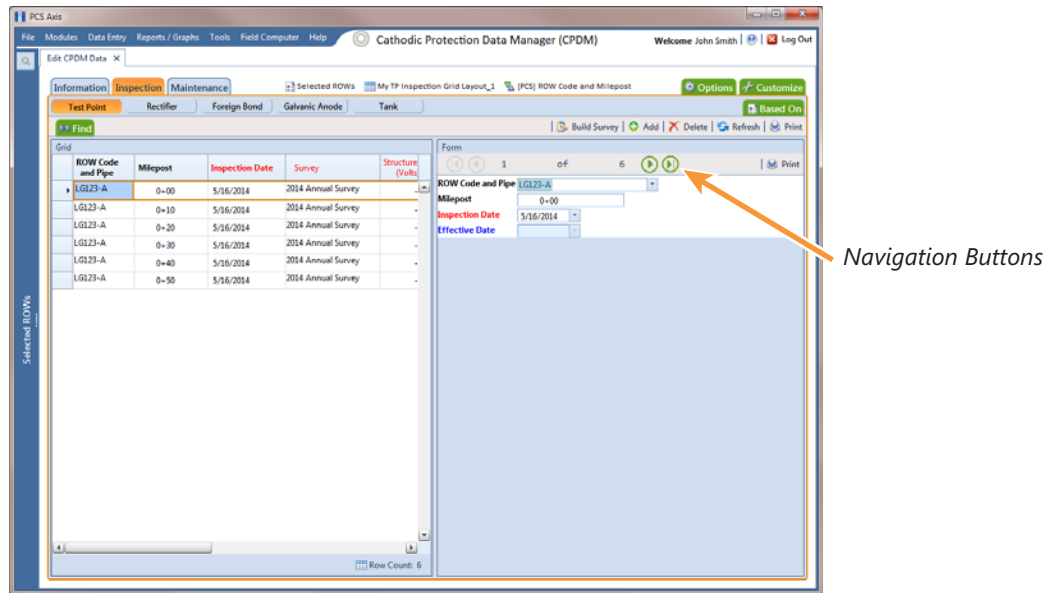
Figure 7-67. Grid and Form

Navigation buttons at the top of a form allow you to view the first ⊙, previous ⊙, next ⊙, and last ⊙ facility record for a selected pipeline segment.

Functions performed with the *Based On* and *Find* tabs as well as command buttons (such as *Build Survey*, *Add*, *Delete*, and *Refresh*) perform the same as those previously described when working in a grid. See *Viewing Records in a Grid* (page 249) and *Using Find to Search a Data Entry Grid* (page 274) for more information.

Arranging a Grid and Form

When the option *Grid And Form* is selected in the *Options* window, you can arrange the grid and form using any of the following methods:

- Right-clicking the title bar in the *Form* or *Grid* panel opens a shortcut menu allowing you to select the **Dock** or **Float** command. Selecting *Dock* docks a floating panel while selecting *Float* floats a docked panel.

- Double-clicking the title bar in the *Form* or *Grid* panel floats these panels when they are docked. Likewise, when the form or grid panel is floating, double-clicking the respective title bar docks the panel.

- Selecting the title bar of a form or grid and then dragging the panel displays a guide diamond. Drag the form or grid panel to the guide diamond to select where you want the panel to dock in the window. In the following example, the right guide in the diamond is selected for the new docking position as indicated by the yellow highlight color in both the guide diamond and window (Figure 7-68).
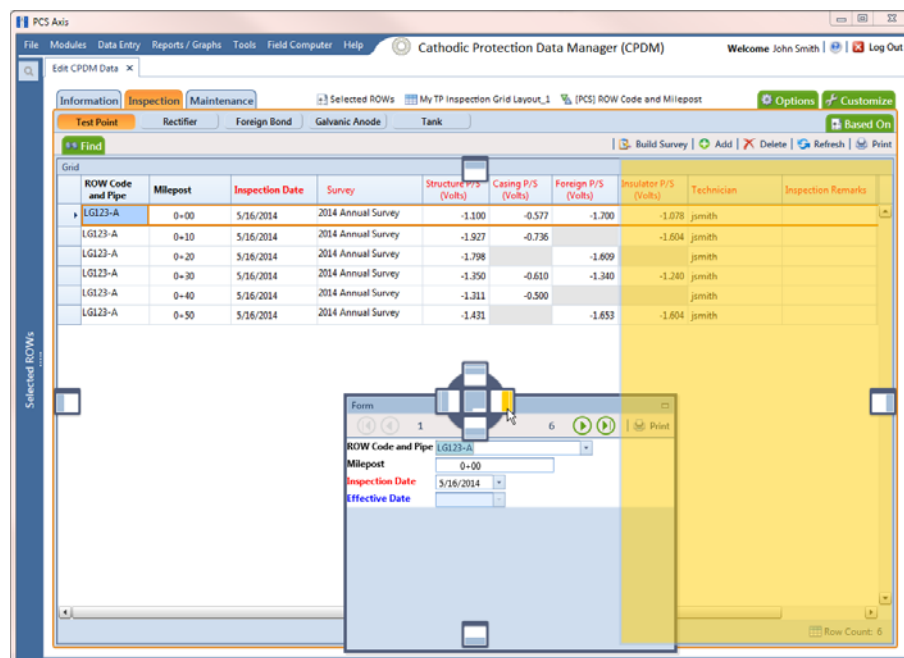
Figure 7-68. Arranging a Grid and Form

Working with Continuous Survey Data

Information in this section explains how to manage survey readings and other data associated with a continuous survey using the Indirect Survey Manager (ISM) module.

Data entry grids in ISM are organized based on the following continuous survey methods: CIS (Close Interval Survey), AC CIS (AC Close Interval Survey), DCVG (DC Voltage Gradient), ACVG (AC Voltage Gradient), ACCA (AC Current Attenuation), Soil Resistivity, and Pearson. For a description of these survey methods, see *Appendix B* (page 845).

Topics in this section include those in the following list:

- *Adding or Deleting a Record in a Continuous Survey*

- *Working with Survey Maintenance* (page 288)

- *Printing, Exporting, or Emailing a Continuous Survey* (page 313)

IMPORTANT: Survey readings must be assigned to a survey folder in *Survey Folder Maintenance* before working with data in ISM. If needed, refer to *Adding a Continuous Survey Folder* (page 196) for more information.

Adding or Deleting a Record in a Continuous Survey

To add or delete a record in a continuous survey, follow these steps:

1 Click the **Select ROWs** button 🔍 to open the *Select ROWs* window (Figure 7-69). Select the pipeline segment(s) with the facilities you want to work with, then click 💾 **Save** to close the window.
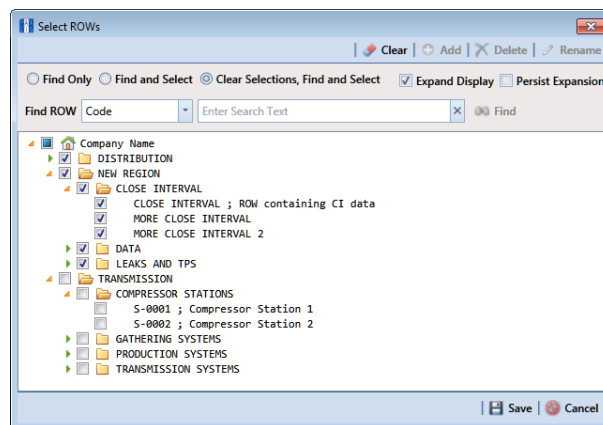

Figure 7-69. Select ROWs

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2 If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3 Open the ISM data entry grid. Click **Data Entry** > **Edit ISM Data** (Figure 7-70).

Figure 7-70. Edit ISM Data

4 Click the button labeled with the type of continuous survey data you want to work with, such as the **CIS** button [CIS] (Figure 7-71).

Figure 7-71. Edit ISM Data

5 Select a survey folder with survey readings you want to modify. Click the down arrow in **Selected Continuous Survey** and select a survey folder from the list.

6 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

7 To add a record in a survey, follow these steps:

a Click ⊕ **Add** to open the *Add Record* dialog box (Figure 7-72).

b Type a survey location in the **Station Number** field. This field is required.

Figure 7-72. Add Record

c Click **Save** to add the record in the grid. For example, a record for station number 10712+56 has been added in the next figure (Figure 7-73).

Figure 7-73. Edit ISM Data

d   Provide survey data as needed. For example, type a survey reading in the *CIS Structure P/S* field and remarks in the *Survey Remarks* field.

e   Click ![Refresh] **Refresh** to update the grid.

8   To delete a record in a survey:

a   Click a station number to select a row of records in the *Edit ISM Data* grid.

b   Click ![Delete] **Delete**.

c   When the *Delete Record* message opens, click ![Delete] **Delete** to delete the selected record. Clicking ![Cancel] **Cancel** cancels the operation.

d   When the following *Warning* message displays, click **Yes** to delete the survey record:

Delete selected survey reading record? This action cannot be undone?

e   Click ![Refresh] **Refresh** to update the grid.

Working with Survey Maintenance

Survey Maintenance provides several functions that simultaneously change a group of records. For example, instead of editing one record at a time to reverse the order of survey readings, use *Reverse* to change a range of survey records all at the same time.

Topics in this section explain how to perform the following tasks:

- *Reversing Survey Readings* (page 289)

- *Shifting Station Numbers* (page 292)

- *Copying Station Numbers to a New Survey* (page 295)

- *Appending a Survey* (page 297)

- *Deleting a Range of Station Numbers* (page 301)

- *Using Spike Filtering* (page 303)

- *Using Rubber Band* (page 306)

- *Resetting Station Numbers* (page 310)

Reversing Survey Readings
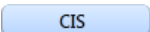
Use *Reverse* to reverse the order of survey readings so that the first reading becomes the last and the last reading becomes the first. Station numbers for all other survey readings are changed so that the survey is reversed or "flipped". This function is typically used when survey readings were taken in an upstream direction instead of downstream, or vice versa.

To reverse the order of survey readings, follow these steps:

1   Click the **Select ROWs** button [🔍] to open the *Select ROWs* window (Figure 7-74). Select the pipeline segment(s) with the facilities you want to work with, then click [💾] **Save** to close the window.
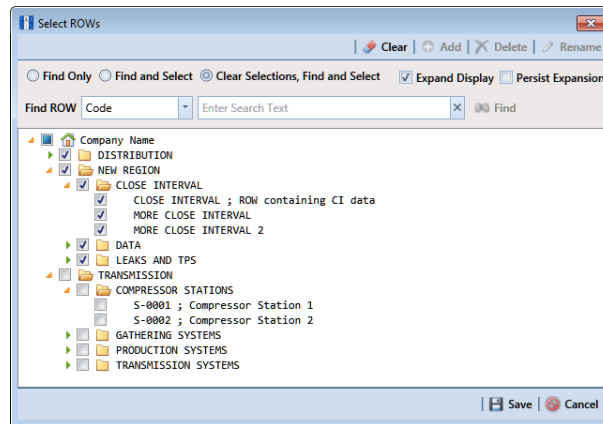
Figure 7-74. Select ROWs

2   If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

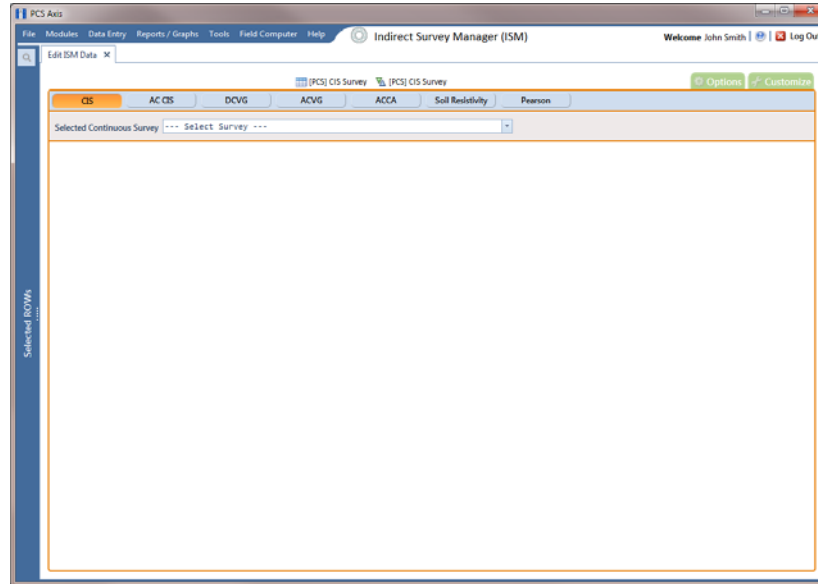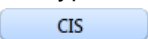3   Open the ISM data entry grid. Click **Data Entry** > **Edit ISM Data**. Then click a button labeled with the type of continuous survey you want to work with, such as the **CIS** button [CIS] (Figure 7-75).
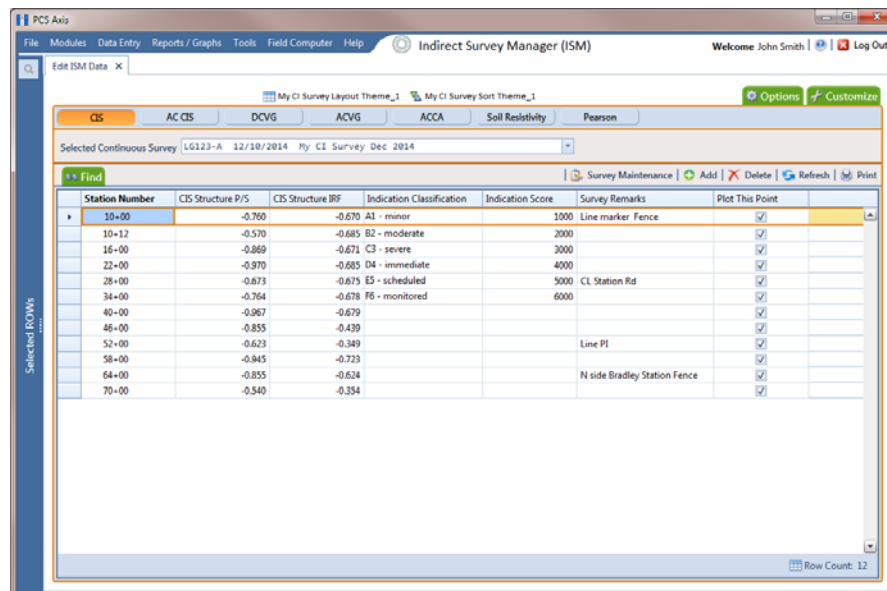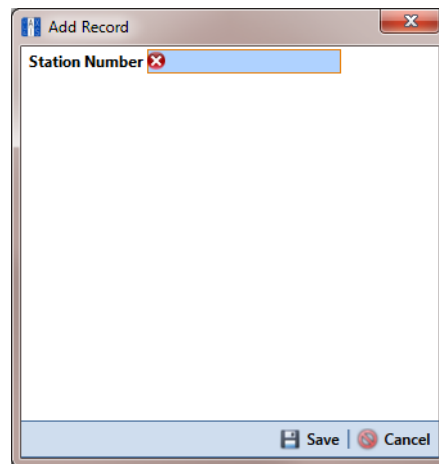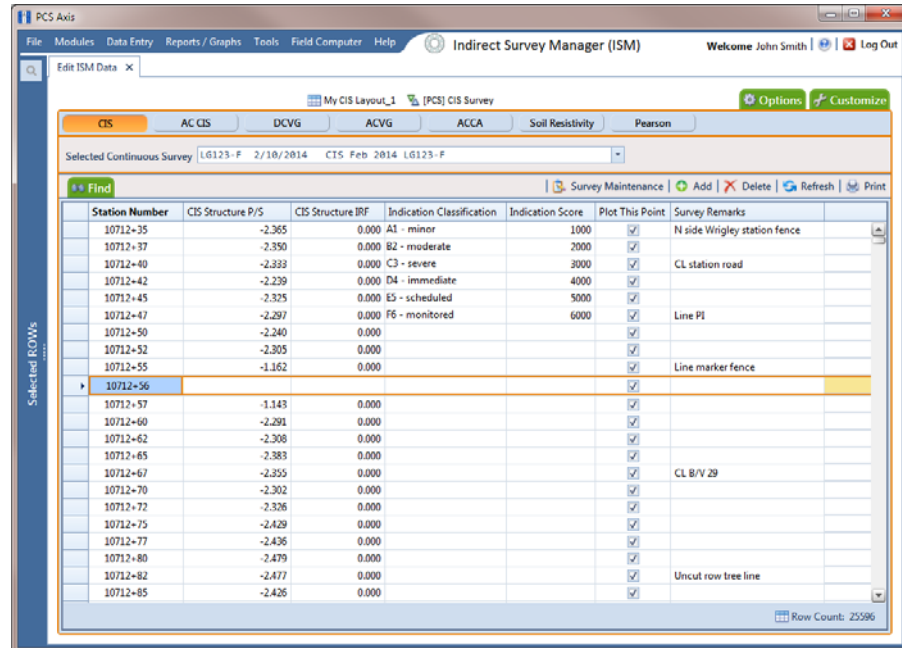
Figure 7-75. Edit ISM Data

4 Select a survey folder with survey readings you want to reverse. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.

NOTE: If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5   Click **Survey Maintenance** to open the *Survey Maintenance* dialog box. Then click **Reverse** if the tab is not selected (Figure 7-76).
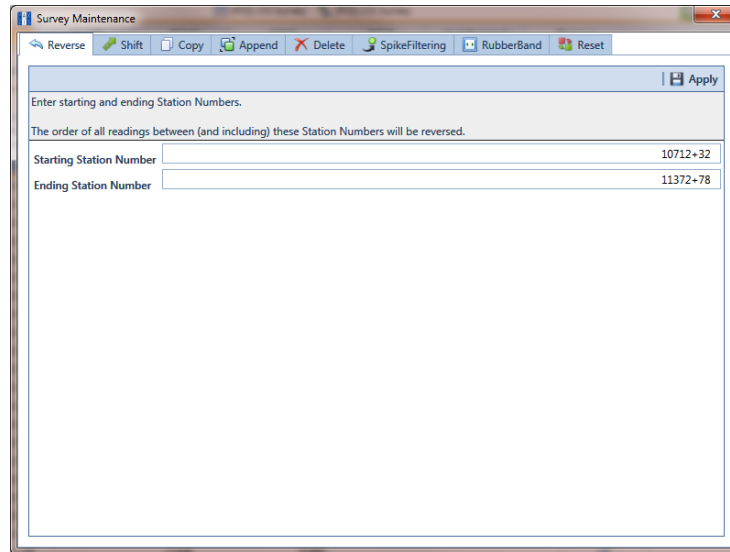
Figure 7-76. Reverse Survey Readings

6   Type a starting station number in the field **Starting Station Number** and an ending station number in the field **Ending Station Number**.

NOTE: Clicking the Windows close button cancels the operation and closes the dialog box.

---

7   Click **Apply** to reverse survey readings and update the data entry grid.

Shifting Station Numbers

Use *Shift* to shift a range of station numbers by a specified number of feet (or meters) or in the direction of an existing facility. Use the option labeled *Distance* when shifting station numbers by feet or meters. To shift a range of station numbers in the direction of an existing facility, use the option labeled *Shift To Facility*.
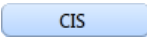
Using *Shift* allows you to add or subtract a fixed distance to station numbers for a range of readings in a survey. This function is typically used when station numbers are not known when performing the survey and they need to be shifted to correct station numbers.

To shift station numbers, follow these steps:

1   Click the **Select ROWs** button ![magnifier icon] to open the *Select ROWs* window (Figure 7-77). Select the pipeline segment(s) with the facilities you want to work with, then click ![save icon] **Save** to close the window.
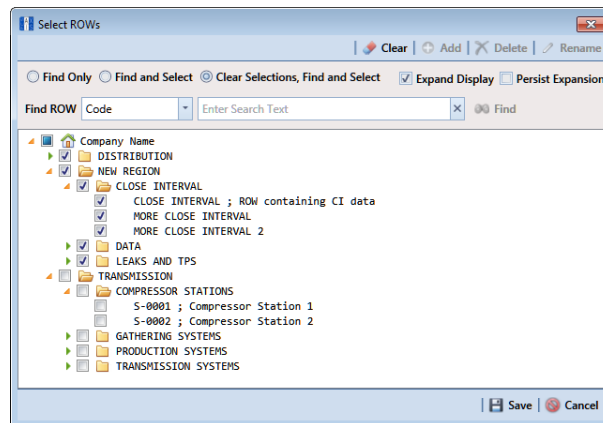
Figure 7-77. Select ROWs

2   If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3   Click **Data Entry** > **Edit ISM Data** to open the ISM data entry grid. Then click a button labeled with the type of continuous survey data you want to work with, such as the **CIS** button [CIS] (Figure 7-78).
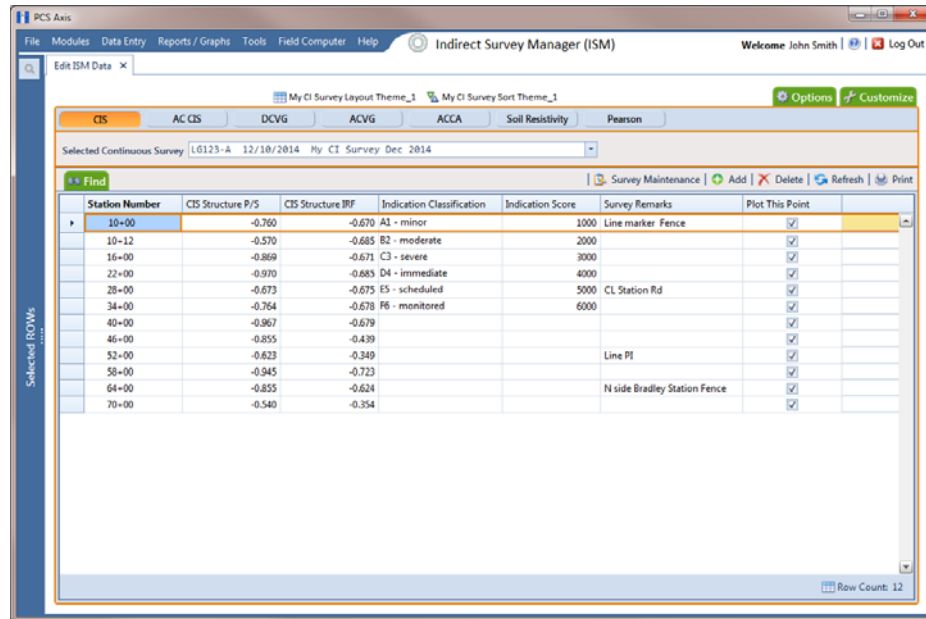
Figure 7-78. Edit ISM Data

4   Select a survey folder with survey readings you want to shift. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.

NOTE: If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

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5 Click ![icon] **Survey Maintenance** to open the *Survey Maintenance* dialog box. Then click ![icon] **Shift** (Figure 7-79).
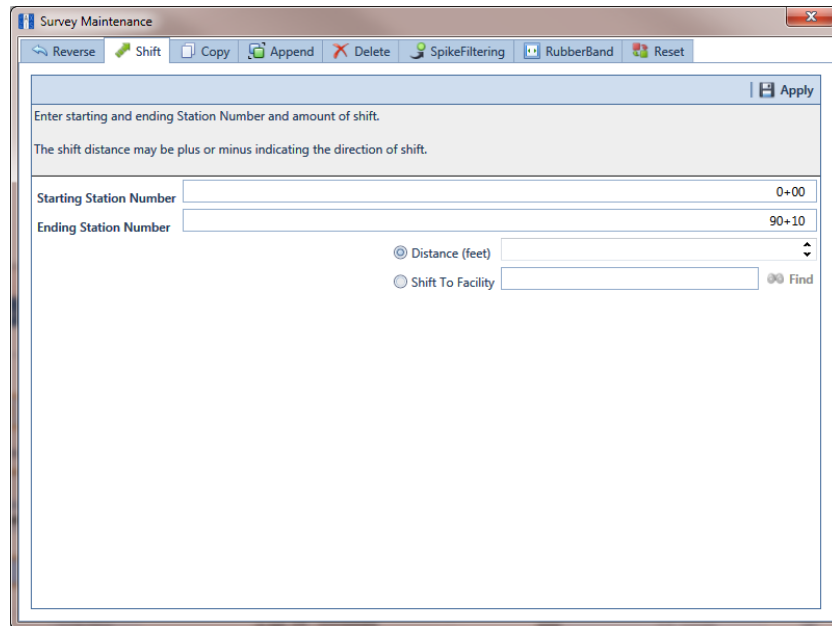
Figure 7-79. Shift Station Numbers

6 Type a starting station number in the field **Starting Station Number** and an ending station number in the field **Ending Station Number**.

7 Select the **Distance** option if it is not selected.

8 Specify a shift distance. Type or select the number of feet (or meters) in the **Distance** field. Clicking the ![icon] up arrow increases the value; clicking the ![icon] down arrow decreases it.

9 If you want to shift station numbers in the direction of an existing facility location, follow these steps:

   a Select the option **Shift To Facility**.

   b Type a facility location in the **Shift To Facility** field or select one in the *Select Facility* dialog box. To select a facility location, click ![icon] **Find** to open the *Select Facility* dialog box and select a facility in the grid. Then click ![icon] **Save** (Figure 7-80).
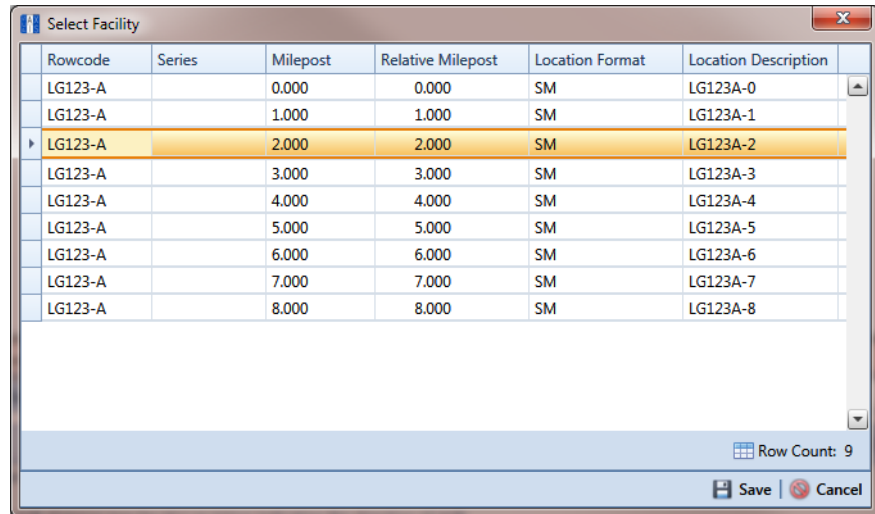
Figure 7-80. Select Facility

NOTE: Clicking the Windows close button [x] cancels the operation and closes the dialog box.

10 Click [save icon] **Apply** to shift station numbers and update the data entry grid.

Copying Station Numbers to a New Survey

To copy a range of station numbers with survey readings to a new survey, complete the following steps:

1 Click the **Select ROWs** button [magnifier icon] to open the *Select ROWs* window (Figure 7-81). Select the pipeline segment(s) with the facilities you want to work with, then click [save icon] **Save** to close the window.
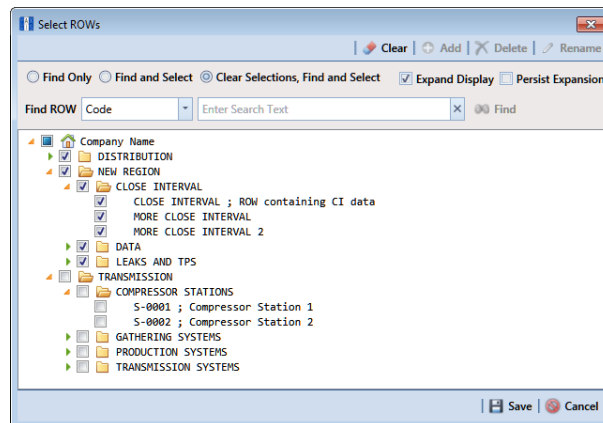
Figure 7-81. Select ROWs

2   If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3   Click **Data Entry** > **Edit ISM Data** to open the ISM data entry grid. Then click a button labeled with the type of continuous survey data you want to work with, such as the **CIS** button [CIS] (Figure 7-82).
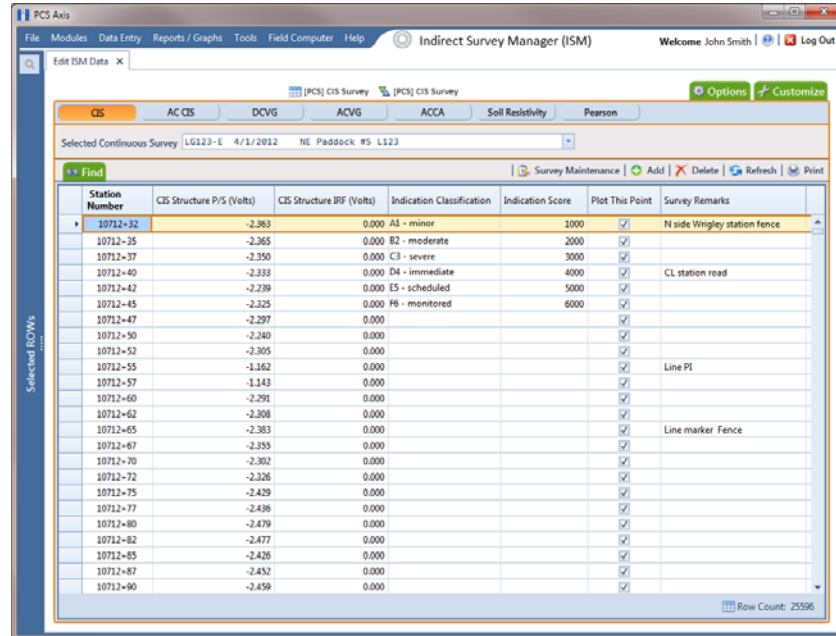
4   Select a survey folder with survey readings you want to copy. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.

NOTE: If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

Figure 7-82. Edit ISM Data

5 Click ![icon] **Survey Maintenance** to open the *Survey Maintenance* dialog box. Then click ![icon] **Copy** (Figure 7-83).

6 Type a starting station number in the field **Starting Station Number** and an ending station number in the field **Ending Station Number**.

7 Type a name for the new survey in the field **New Survey Name**.

8 Click the down arrow in the field **New Survey Date** and select a survey date using a calendar.

NOTE: Clicking the Windows close button ![icon] cancels the operation and closes the dialog box.

---

9 Click ![icon] **Apply** to copy the range of station numbers with survey readings to a new survey. The new survey is available for selection in the *Selected Continuous Survey* field.
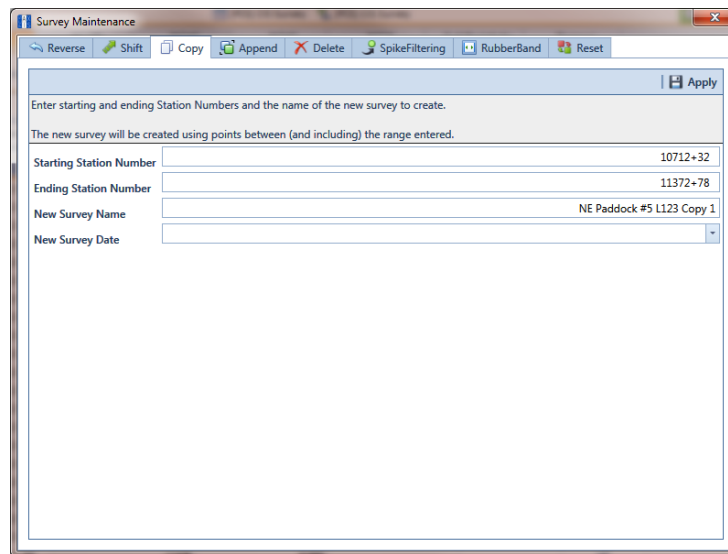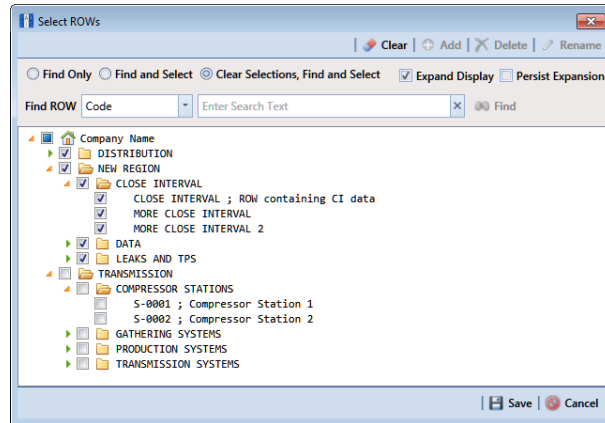
Figure 7-83. Copy to New Survey
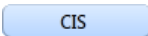
Appending a Survey

To append a survey with a range of station numbers from another survey (including associated survey readings), complete the following steps:

1 Click the **Select ROWs** button ![icon] to open the *Select ROWs* window (Figure 7-84). Select the pipeline segment(s) with the facilities you want to work with, then click ![icon] **Save** to close the window.

Figure 7-84. Select ROWs

2   If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3   Click **Data Entry** > **Edit ISM Data** to open the ISM data entry grid. Then click a button labeled with the type of continuous survey data you want to work with, such as the **CIS** button ⟨ CIS ⟩ (Figure 7-85).

4   Select the survey folder you want to append with survey readings from another survey. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.

**NOTE:** If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

Figure 7-85. Edit ISM Data

5   Click [icon] **Survey Maintenance** to open the *Survey Maintenance* dialog box. Then click [icon] **Append** (Figure 7-87).

6   Select a survey with station numbers you want to add (append) to the survey currently displayed in the ISM data entry grid. Click the down arrow in field **Survey To Append From** and select a survey in the selection list.

7   Identify a range of station numbers you want to append to the survey currently displayed in the ISM data entry grid. Type a starting station number in the field **Starting Station Number** and an ending station number in the field **Ending Station Number**.

NOTE: Clicking the Windows close button [icon] cancels the operation and closes the dialog box.

---

8   If duplicate station numbers do exist, a message displays requiring you to make one of the following selections:
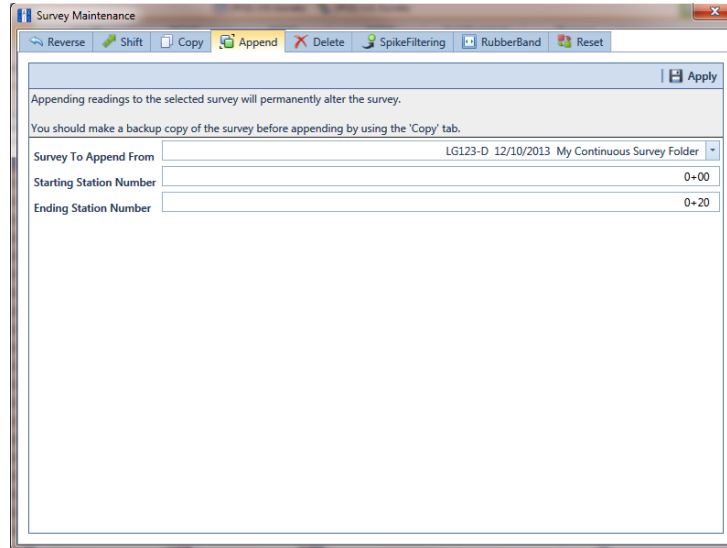
Figure 7-86. Append Survey

9   Click ![save icon] **Apply**. If no duplicate station numbers exist, PCS Axis adds the range of appended station numbers with survey readings to the survey currently displayed in the ISM data entry grid.

If duplicate station numbers do exist, the *Append Duplicates* message displays requiring you to select one of options shown in the following figure. Select an option and then click ![check icon] **OK** to close the message.
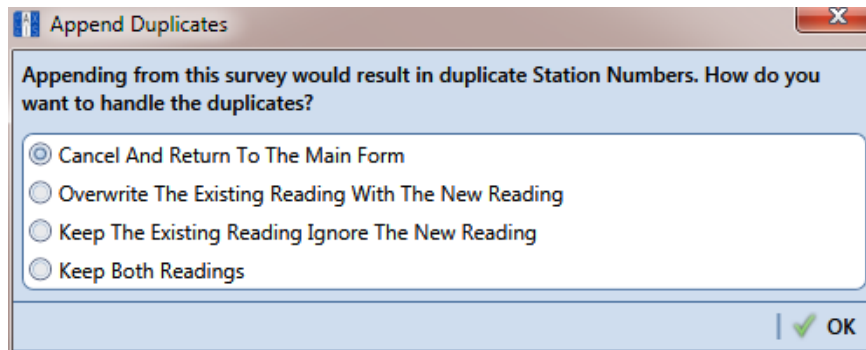
Figure 7-87. Append Duplicates

Deleting a Range of Station Numbers
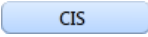
Information in this section explains how to delete a range of station numbers in a survey. Survey readings associated with the range of station numbers are also deleted. Deleting all station numbers in a survey also deletes the survey.

To delete a range of station numbers in a survey, follow these steps:

1 Click the **Select ROWs** button 🔍 to open the *Select ROWs* window (Figure 7-88). Select the pipeline segment(s) with the facilities you want to work with, then click 💾 **Save** to close the window.
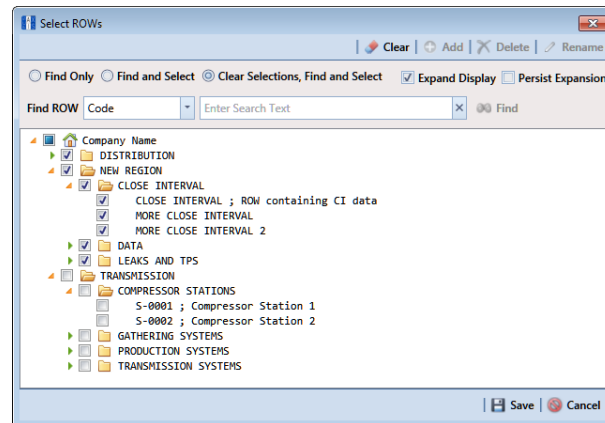
Figure 7-88. Select ROWs

2 If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3 Click **Data Entry** > **Edit ISM Data** to open the ISM data entry grid. Then click a button labeled with the type of continuous survey data you want to work with, such as the **CIS** button ⬚ CIS ⬚ (Figure 7-89).

4 Select a survey folder with station numbers you want to delete. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.

NOTE: If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.
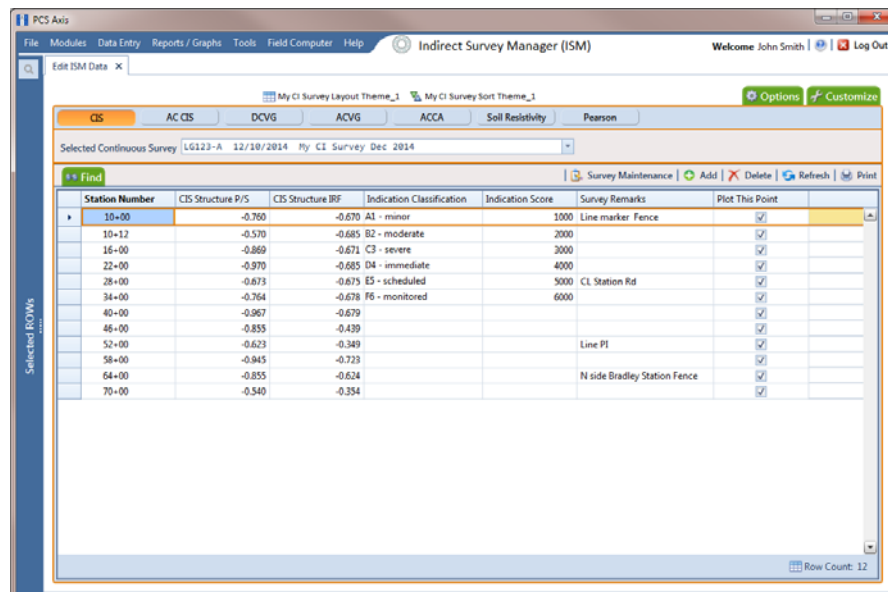

Figure 7-89. Edit ISM Data

5 Click 📇 **Survey Maintenance** to open the *Survey Maintenance* dialog box. Then click ✖ **Delete** (Figure 7-90).

6 Identify the range of station numbers you want to delete (includes associated survey readings). Type a starting station number in the field **Starting Station Number** and an ending station number in the field **Ending Station Number**.

NOTE: Clicking the Windows close button [✖] cancels the operation and closes the dialog box.

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7 Click 💾 **Apply**.
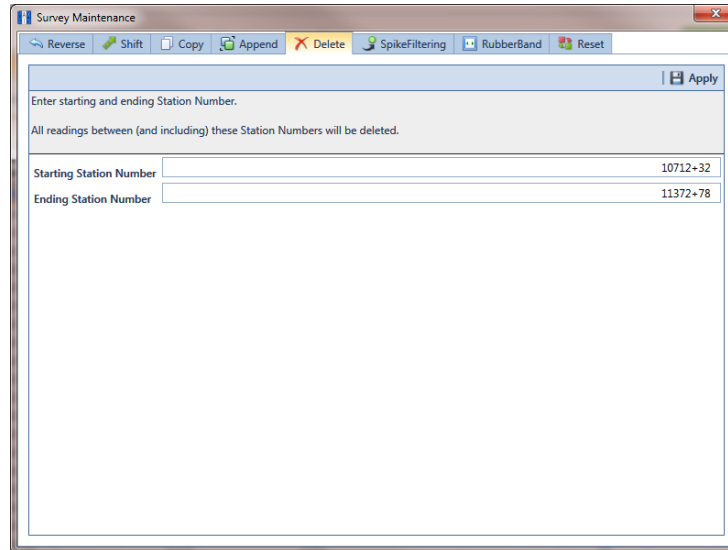
Figure 7-90. Delete Range of Station Numbers

8 When the message *Delete Survey Readings* displays, click ✔ **OK** to delete station numbers and associated survey readings. Clicking 🚫 **Cancel** cancels the operation (Figure 7-91).
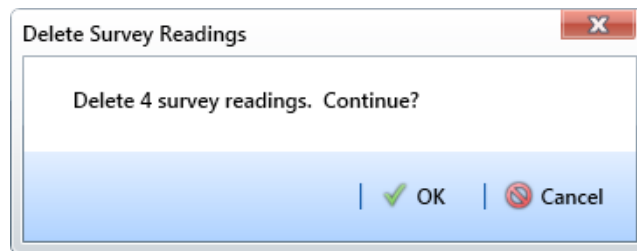
Figure 7-91. Delete Survey Readings

Using Spike Filtering

Spike filtering is available only when working with a close interval survey (CIS). Use spike filtering to exclude inaccurate survey readings in graphs and reports that are typically due to poor contact between the soil and reference electrode. Using this feature allows you to consider only those survey readings that are accurate when analyzing survey data.
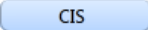
Inaccurate readings are excluded based on a percentage value you specify for the filter. PCS Axis compares the on/off values of the current reading with the on/off values of the previous and next reading. If the current survey reading differs from the previous and next survey reading by more than the percentage allowed, PCS Axis disables the option *Plot This Point* for the current survey reading and also excludes it in the *CIS Survey Graph* report.

To apply spike filtering to a range of station numbers, follow these steps:

1   Click the **Select ROWs** button 🔍 to open the *Select ROWs* window (Figure 7-92). Select the pipeline segment(s) with the facilities you want to work with, then click 💾 **Save** to close the window.
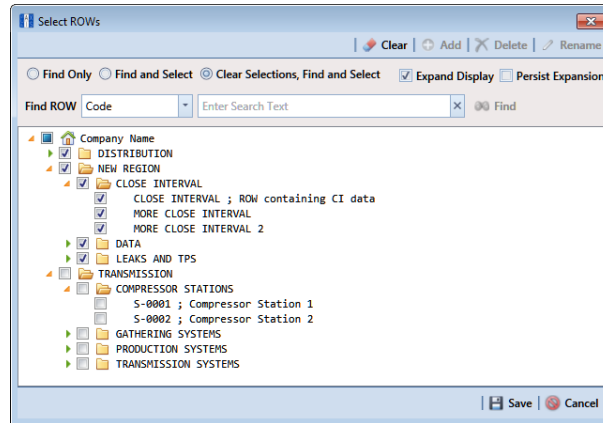
Figure 7-92. Select ROWs

2   If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3   Click **Data Entry** > **Edit ISM Data** to open the ISM data entry grid. Then click the **CIS** button 〔 CIS 〕 to work with a close interval survey (Figure 7-93, page 305).

4   Select a survey folder with station numbers you want to apply *Spike Filtering*. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.

NOTE: If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.
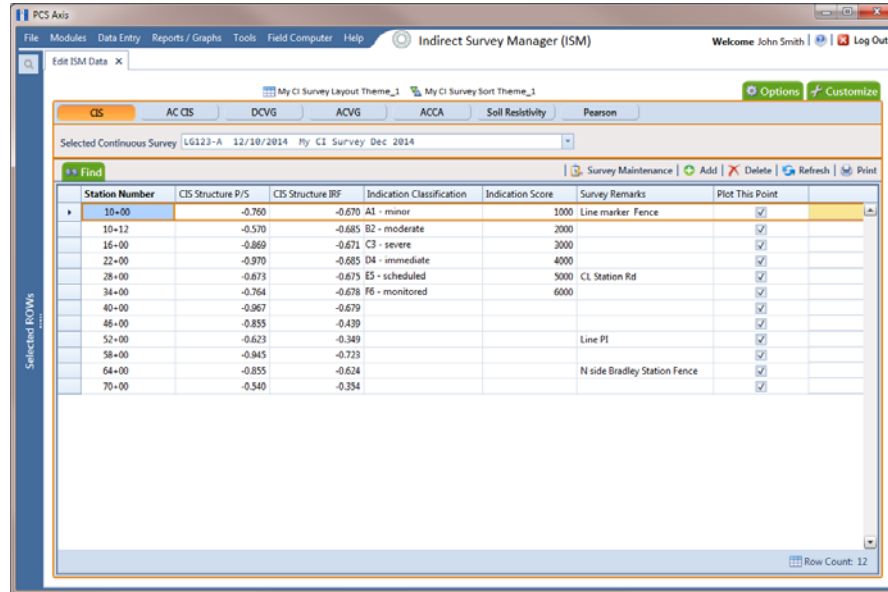

Figure 7-93. Edit ISM Data

5   Click ![icon] **Survey Maintenance** to open the *Survey Maintenance* dialog box. Then click ![icon] **SpikeFiltering** (Figure 7-94, page 306).

6   Type a starting station number in the field **Starting Station Number** and an ending station number in the field **Ending Station Number**.

7   Type a value in the **Spike Percentage** field. Valid entries are in a range of 1-99.

NOTE: Clicking the Windows close button ![button] cancels the operation and closes the dialog box.

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8   Click ![icon] **Apply** and then click ![icon] **OK** when a status message displays.

The option *Plot This Point* is disabled in the data entry grid only for station numbers that meet *Spike Filtering* criteria.
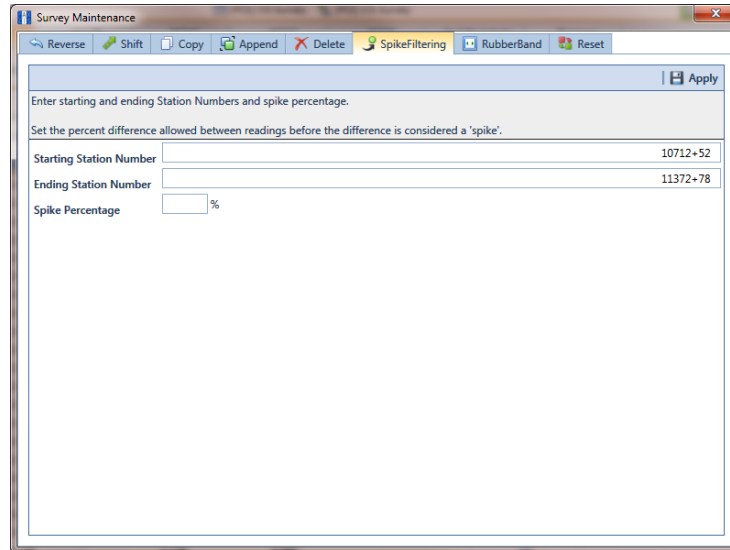
Figure 7-94. Spike Filtering

Using Rubber Band

Use *Rubber Band* to adjust a range of station numbers by stretching or shrinking sections of a survey so that station numbers line up with known points along the survey or existing facilities.

Using *Rubber Band* allows you to re-align station numbers for a selected survey. After entering known station numbers for the first, last, and any other station numbers in between, *Rubber Band* adjusts remaining station numbers in a linear manner between known station numbers. Station numbers are then listed in ascending order (lowest to highest).
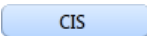
When you first use *Rubber Band*, the fields labeled *Original* and *Target* include two match point records by default. These match point records are the first and last station numbers in the selected survey. Station numbers in the *Original* field are the original station numbers initially stored in PCS Axis as a result of importing survey data, entering survey data manually, or receiving survey data from the Allegro Field PC. Station numbers in the *Target* field are the corrected or adjusted station numbers that you enter or are entered as a result of the *Rubber Band* feature.

To adjust a range of station stations using the *Rubber Band* function, follow these steps:

1   Click the **Select ROWs** button ![icon] to open the *Select ROWs* window (Figure 7-95). Select the pipeline segment(s) with the facilities you want to work with, then click ![icon] **Save** to close the window.

Figure 7-95. Select ROWs

2   If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3   Click **Data Entry** > **Edit ISM Data** to open the ISM data entry grid. Then click a button labeled with the type of continuous survey data you want to work with, such as the **CIS** button   CIS   (Figure 7-96).

4   Select a survey folder with station numbers you want to apply the *Rubber Band* function. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.

NOTE: If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.
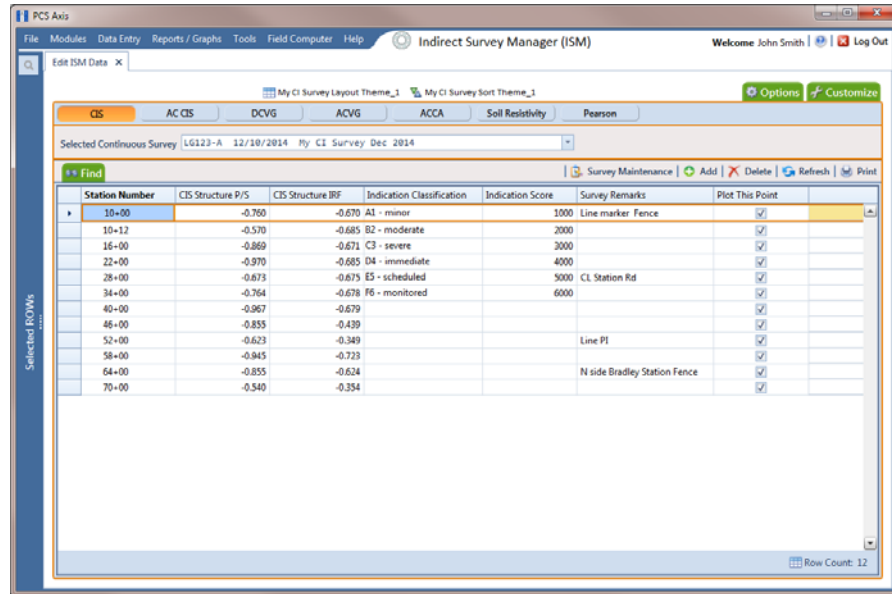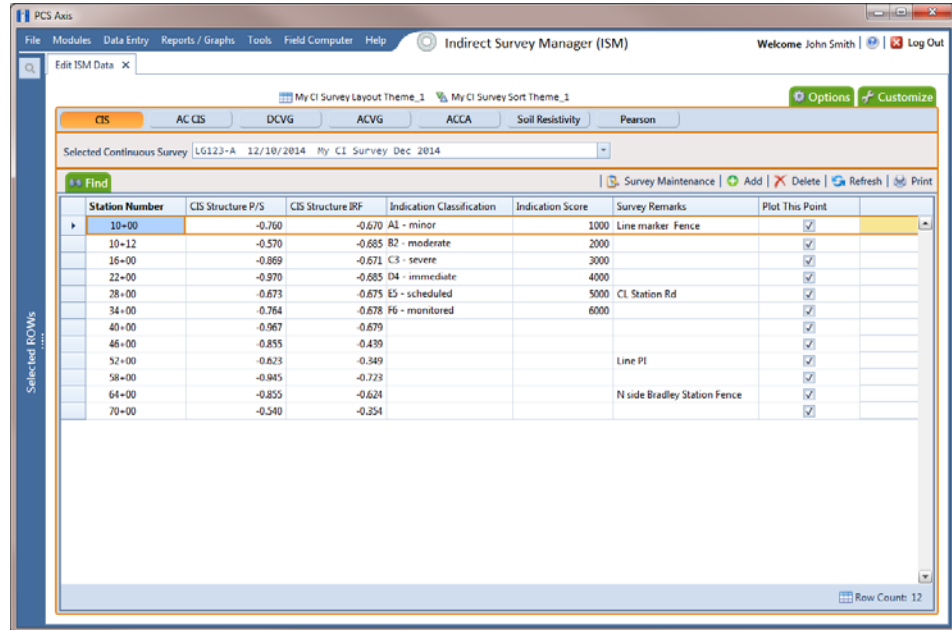

Figure 7-96. Edit ISM Data

5 Click ![icon] **Survey Maintenance** to open the *Survey Maintenance* dialog box. Then click ![icon] **RubberBand** (Figure 7-97, page 309).

6 Complete the following steps to re-align station numbers in a survey:

a To re-align the first station number in the survey, type a new station number in the **Target** field of the first station number.

If you want to re-align the first station number to an existing facility instead, click ![icon] the find button to open the *Select Facility* dialog box and select a facility in the grid. Then click ![icon] **Save**.

b To re-align the last station number in the survey, type a new station number in the **Target** field of the last station number.

If you want to re-align the last station number to an existing facility instead, click ![icon] the find button to open the *Select Facility* dialog box and select a facility in the grid. Then click ![icon] **Save**.

c To add new match points for known station numbers, click ![icon] **New** to add empty *Original* and *Target* match point fields. Then type the station number you want to re-align in the **Original** field and the adjusted (or corrected) station number in the **Target** field.

If you want to re-align the adjusted station number to an existing facility instead, click ![icon] the find button to open the *Select Facility* dialog box and select a facility in the grid. Then click ![icon] **Save**.

d   To delete a row of match points, select the row and then click ✖ **Delete**.

NOTE: Clicking 🔄 **Reset** before clicking *Apply* resets station numbers to their original values.

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e   Click 💾 **Apply**. When the *Apply* message displays, click ✅ **OK** to continue or 🚫 **Cancel** to cancel the operation.

7   Click 🔄 **Refresh** to update data in the grid.
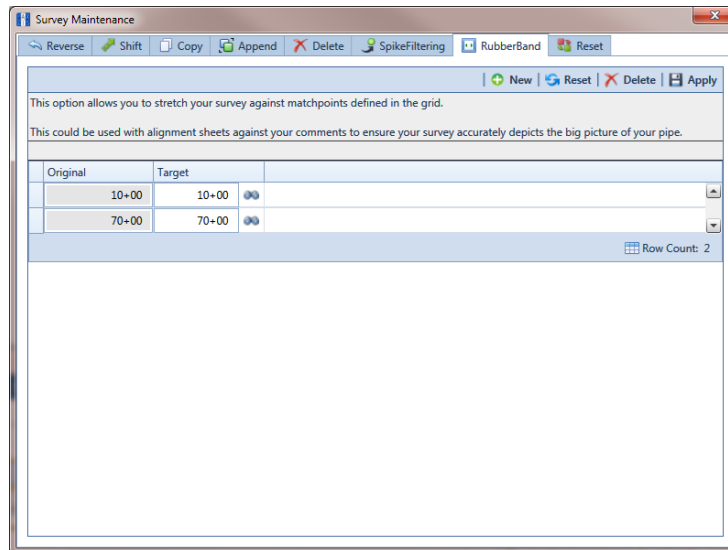
Figure 7-97. Rubber Banding

Resetting Station Numbers
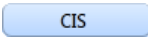
Use *Reset* to return all station numbers in the selected survey to original station numbers that were collected when the survey was first entered in the ISM data entry grid.

To reset station numbers, follow these steps:

1   Click the **Select ROWs** button 🔍 to open the *Select ROWs* window (Figure 7-98). Select the pipeline segment(s) with the facilities you want to work with, then click 💾 **Save** to close the window.
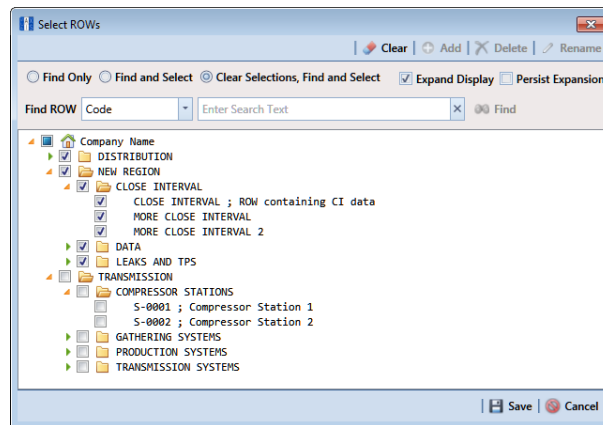
Figure 7-98. Select ROWs

2   If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3   Click **Data Entry** > **Edit ISM Data** to open the ISM data entry grid. Then click a button labeled with the type of continuous survey data you want to work with, such as the **CIS** button ⟨ CIS ⟩ (Figure 7-99).

4   Select a survey folder with survey readings you want to shift. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.

NOTE: If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.
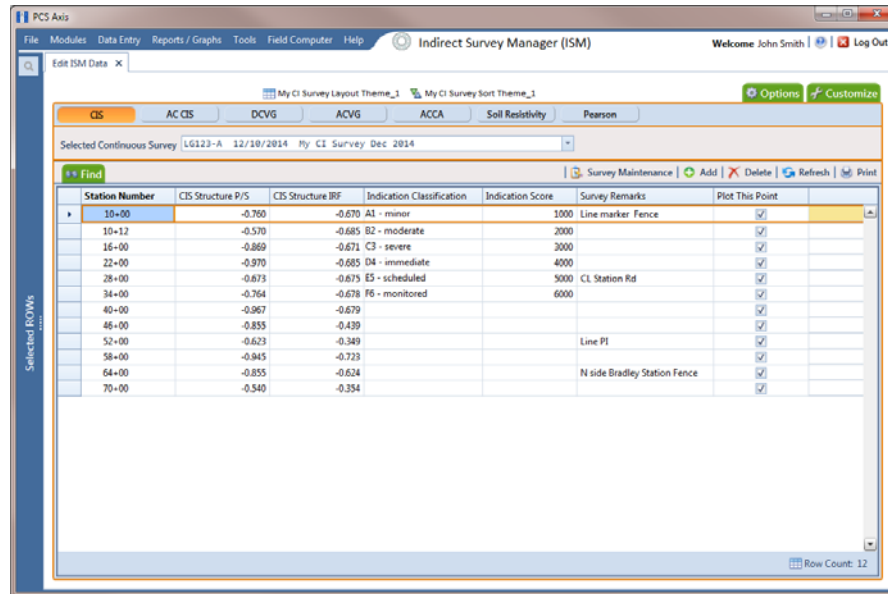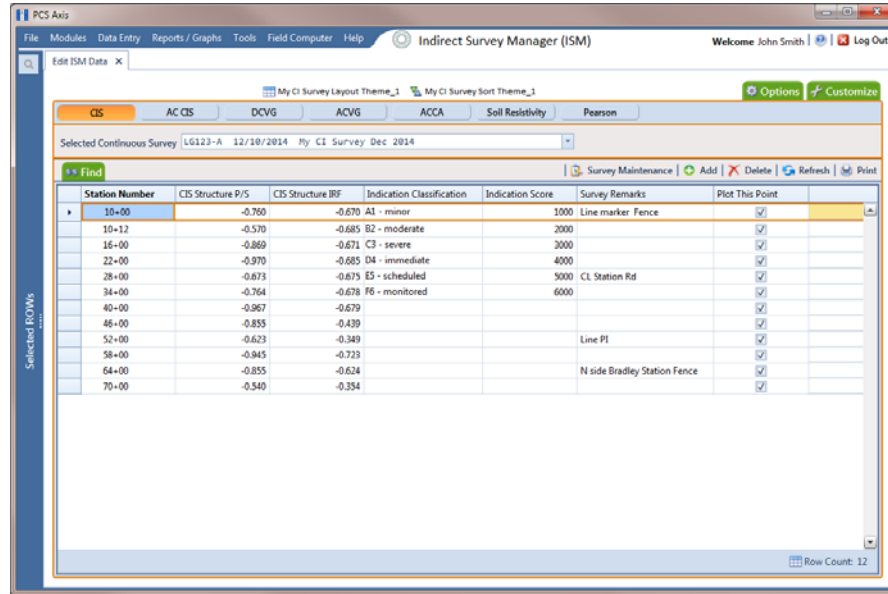

Figure 7-99. Edit ISM Data

5   Click **Survey Maintenance** to open the *Survey Maintenance* dialog box.
Then click **Reset** (Figure 7-100).
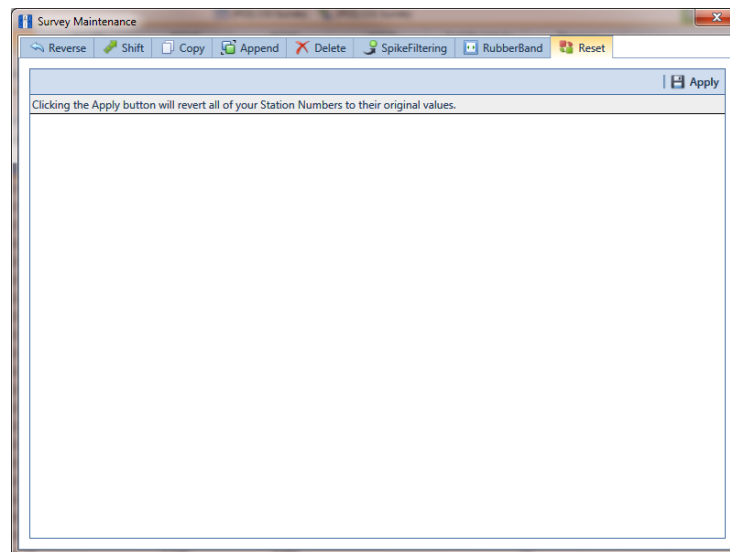
Figure 7-100. Reset

6   Click **Apply**. When the *Reset Station Numbers* message displays, click **OK**
to reset all station numbers or **Cancel** to cancel the operation (Figure 7-101).

The data entry grid now displays original station numbers.
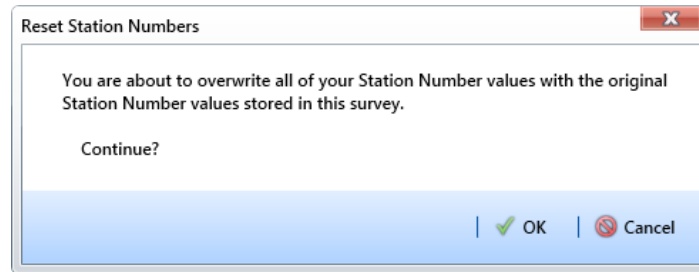
Figure 7-101. Reset Station Numbers

Printing, Exporting, or Emailing a Continuous Survey

The following information explains how to print, export, or email a report for a continuous survey displaying in the *Edit ISM Data* grid. Supported file formats for exporting a report include PDF, HTML, MHT, RTF, XLS, XLSX, CSV, TXT, and Image (BMP, EMF, WMF, GIF, JPEG, PNG, and TIFF).
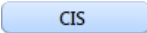
Complete the following steps:

1 Click the **Select ROWs** button 🔍 to open the *Select ROWs* window (Figure 7-102). Select the pipeline segment(s) with the facilities you want to work with, then click 💾 **Save** to close the window.
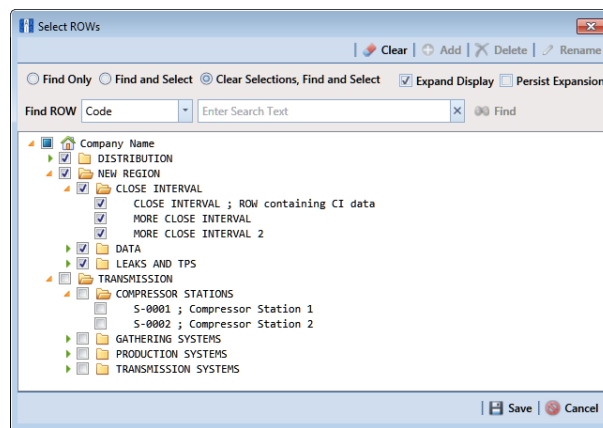
Figure 7-102. Select ROWs

NOTE: If you want to collapse the *Selected ROWs* panel, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

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2 If the ISM module is not open, click **Modules** > **Indirect Survey Manager (ISM)**.

3 Click **Data Entry** > **Edit ISM Data** to open the ISM data entry grid. Then click a button labeled with the type of continuous survey data you want to work with, such as the **CIS** button (CIS) (Figure 7-103).

4 Select a survey folder with survey readings you want to print or export. Click the down arrow in **Selected Continuous Survey** and select a survey folder in the selection list.
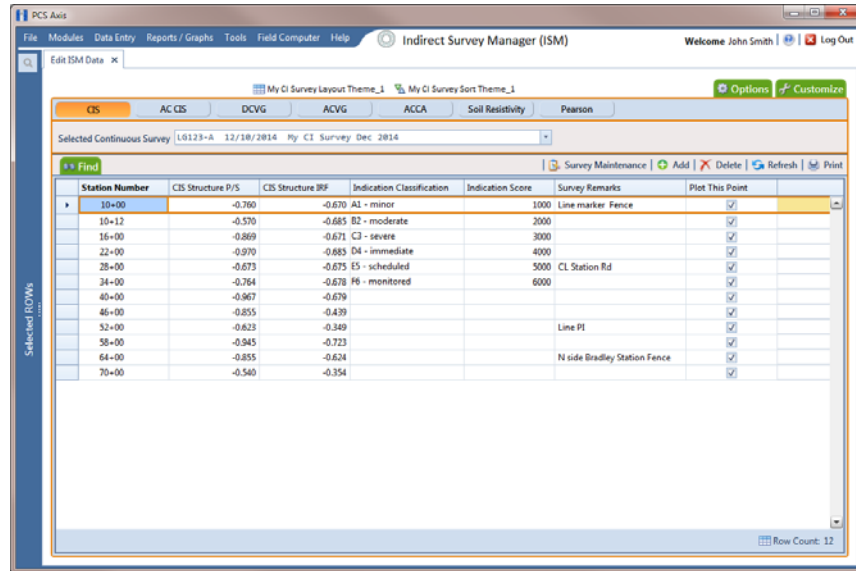
Figure 7-103. Edit ISM Data

5 Click 🖶 **Print** to open a print preview window (Figure 7-104).

6 To print the report using the default Windows printer, click 🖨 **Quick Print**.

7 To open a print dialog box and select a printer to print the report, click 🖨 **Print**.
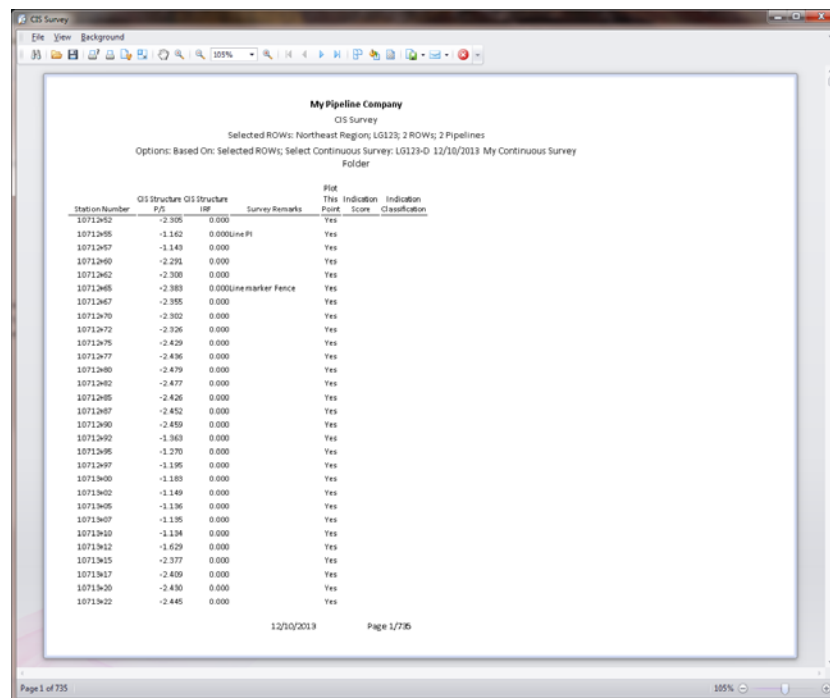
Figure 7-104. Print Preview

8 To select a file format and export the report, follow these steps:

    a Click the down arrow in ⬇ **Export Document** and select a file format in the selection list.

    b When the *Options* dialog box opens, set up optional property settings and then click **OK** to close the dialog box.

    c When the *Save As* dialog box opens, type a name for the report in the **File name** field and then navigate to a location on your computer to save the report.

    d Click **Save**. When the message *Do you want to open this file* displays, click **Yes** or **No**.

9 To send the report as an attachment in an email, follow these steps:

    a Click the down arrow in ✉ **Send via E-mail** and select a file format in the selection list.

    b When the *Options* dialog box opens, set up optional property settings and then click **OK** to close the dialog box.

    c When the *Save As* dialog box opens, type a name for the report in the **File name** field and then navigate to location on your computer to save the report. Click **Save**.

    d When an email message opens with the report as an attachment, select an email recipient and then click **Send**.

10 Click ✖ **Exit** to close the print preview window and return to the data entry grid.

Working with Themes and Filter Groups

A theme is a group of named settings saved for later use, such as a grid layout or sort theme. Themes are either public or private. A public theme is available for use by all PCS Axis users. A private theme is available only to the user who creates it.

Several installed themes are provided with the PCS Axis software installation. PCS Axis installed themes are public themes available to all PCS Axis users. These themes are identified with a globe icon and PCS in brackets [PCS], such as [**PCS] Test Point Inspections**.

NOTE: Only public themes for layouts, sorts, and reports are available for selection. If you would like to use a private theme, your company's system administrator must make your private theme a public one.

A filter group is a named set of one or more filters that affect the data output in the *Define Routes* grid and subsequently the route itself. PCS Axis provides two types of filter groups you can define. These include the AND and OR filter groups.

When you add a filter group, you define filter conditions that determine which records to include or exclude in the *Define Routes* grid and the route. Adding an AND filter group produces a subset of records that meet *all* filter conditions. Adding an OR filter group produces a subset of records that meet *any* filter condition. When you apply a filter group, PCS Axis processes filters in descending order beginning with the filter at the top of the group.

The following sections describe how to add a layout theme, sort theme, and one or more optional filter groups. Topics include those in the following list:

- *Adding a Data Grid Layout Theme*

- *Adding a Sort Theme* (page 320)

- *Adding an AND Filter Group* (page 324)

- *Adding an OR Filter Group* (page 327)

- *Editing and Arranging Filters and Filter Groups* (page 330)

Adding a Data Grid Layout Theme
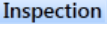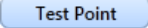
A layout theme is a group of fields in a grid layout. Adding a new layout theme allows you to select which fields you want to include in the grid layout and then save the layout as a theme for later use. The following procedure applies to the grid layout for any data entry grid in PCS Axis.

Complete the following steps:

1   Select one or more pipeline segments in the *Select ROWs* window (Figure 7-105). Click ▣ **Save** to close the window.
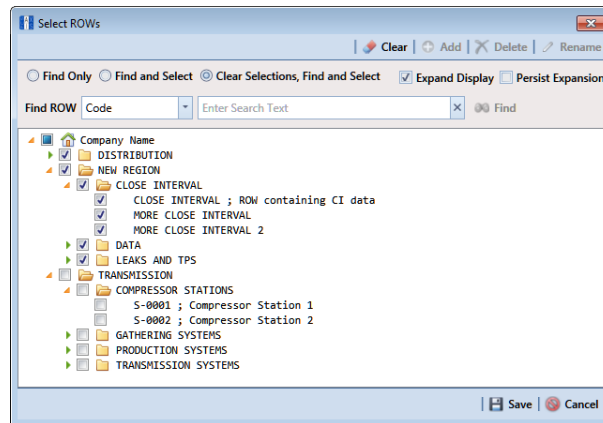
Figure 7-105. Select ROWs

2   Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3   Open the data entry grid that you want to add a new grid layout theme. For example, click the **Inspection** tab `Inspection` and then the **Test Point** button `Test Point` to display the *Test Point Inspection* grid.

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5   Click the **Customize** tab `Customize` then the ➕ **Add** button to open the *New Layout Theme* dialog box (Figure 7-106).
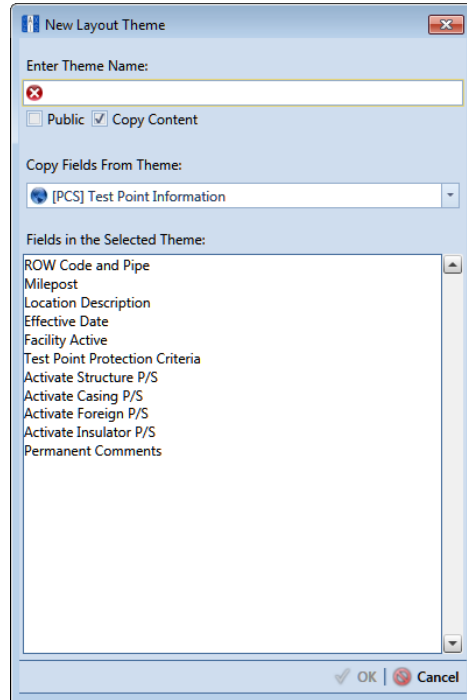
Figure 7-106. New Layout Theme

6 Type a name for the layout theme in the field **Enter Theme Name** (required).

7 If you want to create a *public* theme, click the **Public** check box to place a check mark inside the check box. When the check box is empty, the layout saves as a *private* theme.

NOTE: Themes are either public or private. A public theme is available for use by all PCS Axis users. A private theme is available only to the user who creates it.

---

8 If you want to copy fields from an existing layout theme, click the **Copy Content** check box to place a check mark inside the check box. Then click the down arrow in the field **Copy Fields From Theme** and select a theme in the selection list.

If you do not want to copy fields from an existing layout theme, remove the check mark inside the *Copy Content* check box by clicking the check box.

9 Click ✔ **OK** to save changes and return to the *Layouts* page (Figure 7-107).
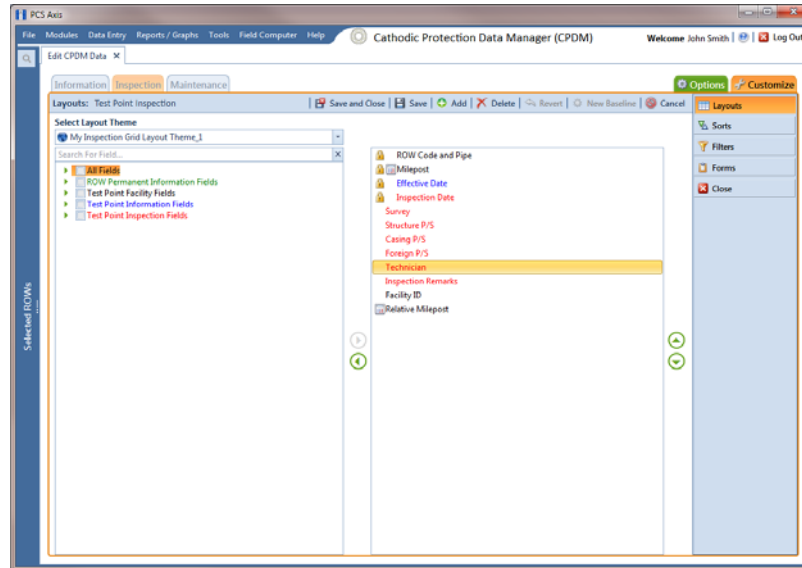
Figure 7-107. Layouts

10 Complete the following steps to add and remove fields in the new layout theme as needed:

   a   Click the toggle arrow ▶ for a field category in the left pane of the window to view a list of fields available for selection. For example, click ▶ **All Fields**.

   b   Double-click a field listed in the left pane to move it to the right pane. Repeat this step as needed. The grid layout theme includes all fields listed in the right pane of the *Layouts* page.

   c   To remove a field in the layout theme, double-click a field listed in the right pane to move it to the left pane. Repeat this step as needed.

11 To change the order of fields listed in the right pane and subsequently in the grid, click and drag a field to a new position in the list. Or, select a field and then click the up ▲ or down ▼ button.

12 Click 💾 **Save** to save changes.

13 To apply the new layout theme to the data entry grid, follow these steps:

   a   Click the **Options** tab ⚙ Options to open the options page (Figure 7-108).

   b   Click the down arrow in the field **Select Layout Theme** and select the new layout theme in the selection list.

14 Click 💾 **Apply** to apply changes and return to the data entry grid.
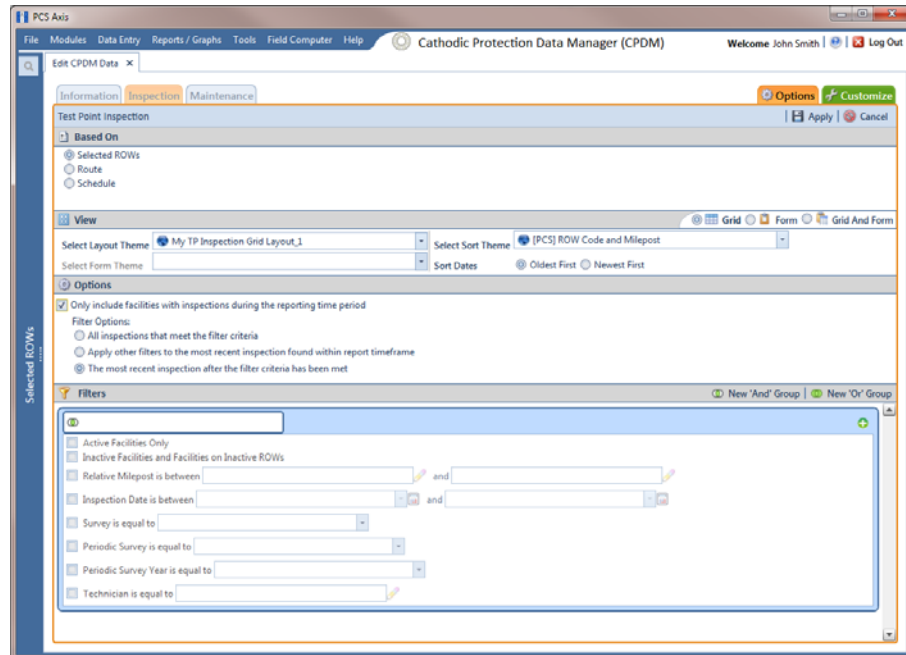
Figure 7-108. Options

Adding a Sort Theme

A sort theme determines how PCS Axis sorts records in the data entry grid. Adding a sort theme allows you to select which field(s) to sort records by and if records sort alphanumerically in ascending or descending order.

To add a sort theme, follow these steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-109). Click ▦ **Save** to close the window.
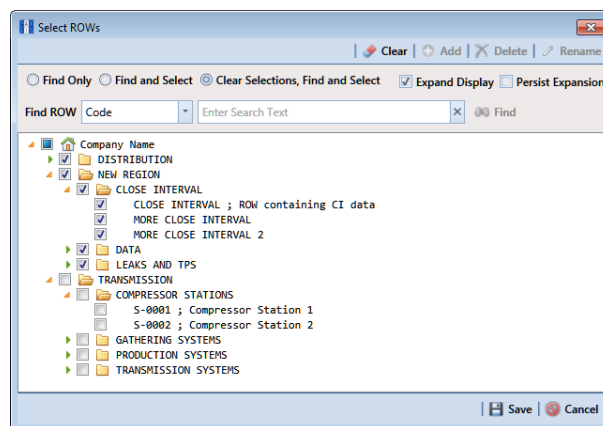
Figure 7-109. Select ROWs

2 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3 Open the data entry grid that you want to add a new grid sorting theme. For example, click the **Inspection** tab `Inspection` and then the **Test Point** button `Test Point` to display the *Test Point Inspection* grid.

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Click the **Customize** tab `Customize` then the **Sorts** button `Sorts` to open the *Sorts* page (Figure 7-110).
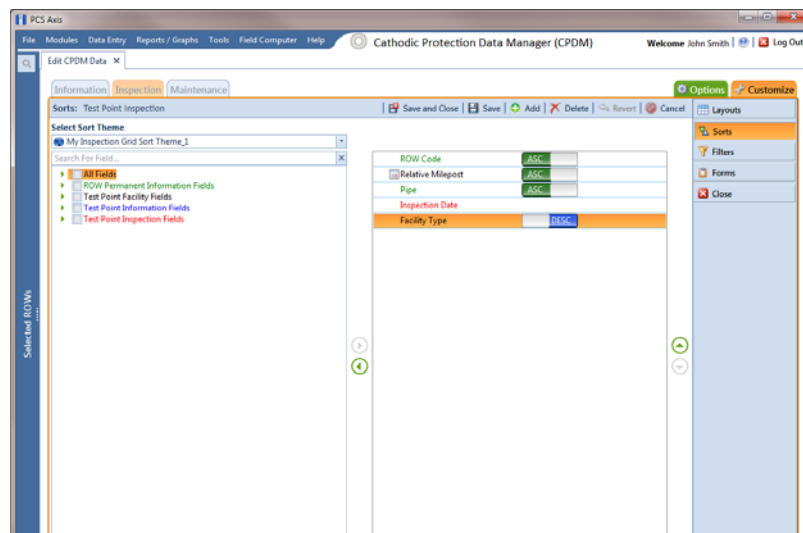
Figure 7-110. Sorts

6 Click the ➕ **Add** button to open the *New Sort Theme* dialog box (Figure 7-111).
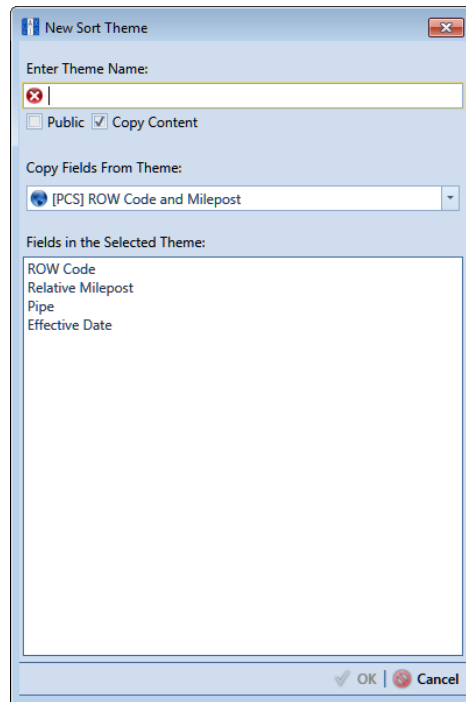
Figure 7-111. New Sort Theme

7 Type a name for the layout theme in the field **Enter Theme Name** (required).

8 If you want to create a *public* theme, click the **Public** check box to place a check mark inside the check box. When the check box is empty, the layout saves as a *private* theme.

NOTE: Themes are either public or private. A public theme is available for use by all PCS Axis users. A private theme is available only to the user who creates it.

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9 If you want to copy fields from an existing layout theme, click the **Copy Content** check box to place a check mark inside the check box. Then click the down arrow in the field **Copy Fields From Theme** and select a theme in the selection list.

If you do not want to copy fields from an existing layout theme, remove the check mark inside the *Copy Content* check box by clicking the check box.

10 Click ✔ **OK** to save changes and return to the *Sorts* page.

11 Complete the following steps to add and remove fields in the new sorting theme as needed:

a Click the toggle arrow ▶ for a field category in the left pane of the window to view a list of fields available for selection. For example, click ▶ **All Fields** (Figure 7-112).
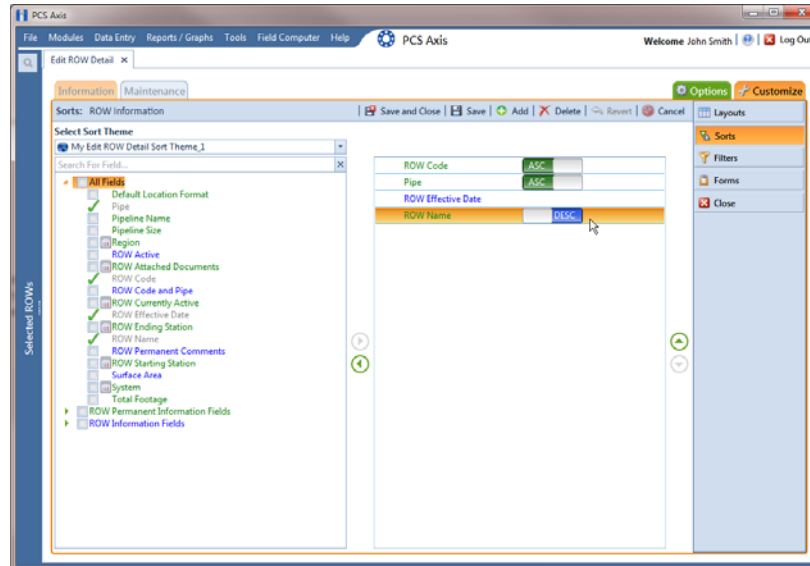
Figure 7-112. Sorts Theme: All Fields

b Double-click a field listed in the left pane to move it to the right pane. (Clicking the top arrow button ➡ also moves the selected field.) Repeat this step as needed. The sorting theme includes all fields listed in the right pane.

c If you want to remove a field in the sorting theme, double-click a field listed in the right pane to move it to the left pane. (Clicking the bottom arrow button ⬅ also moves the selected field.) Repeat this step as needed.

12 Select a sorting method for each field listed in the right pane. To sort grid records in ascending order, click the toggle button to select **ASC** ASC . To sort in descending order, click the toggle button to select **DESC** DESC .

13 To change the order of fields listed in the right pane and subsequently in the grid, click and drag a field to a new position in the list. Or, select a field and then click the up ▲ or down ▼ button.

14 Click ![save icon] **Save and Close** to save changes and return to the data entry grid.

15 To apply the new sorting theme to the data entry grid, follow these steps:

    a Click the **Options** tab ![Options button] to open the options page.

    b Click the down arrow in the field **Select Sort Theme** and select the new sorting theme in the selection list (Figure 7-113).

16 Click ![apply icon] **Apply** to apply changes and return to the data entry grid.
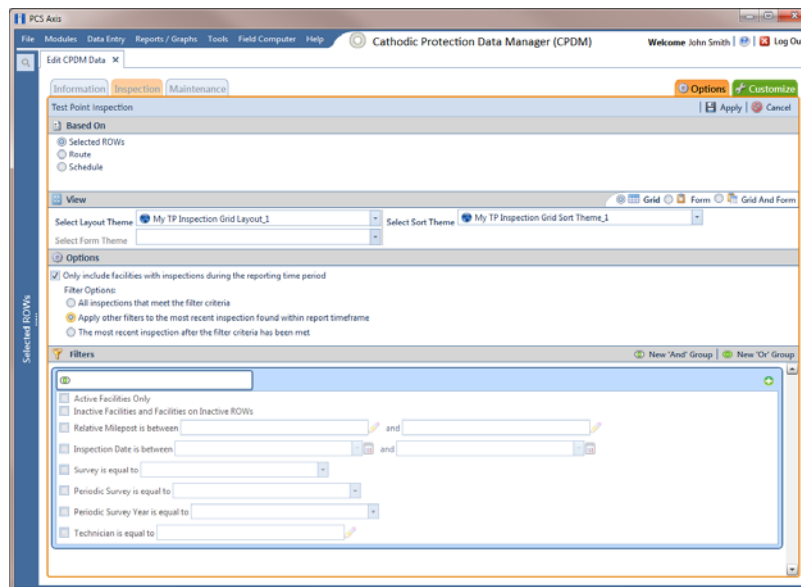
Figure 7-113. Apply Sort Theme

Adding an AND Filter Group

An AND filter group is a named set of one or more filters that affect the data output in a data entry grid in *Data Entry*. Adding an AND filter group produces a subset of records that meet *all* filter conditions. PCS Axis processes filters in a filter group in descending order beginning with the filter at the top of the filter group.

To add an AND filter group, follow these steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-114). Click ![save icon] **Save** to close the window.
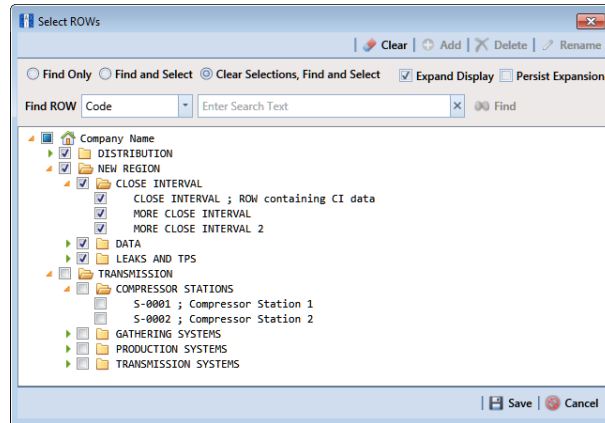
Figure 7-114. Select ROWs

2   Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** > to open the *Edit CPDM Data* window.

3   Select the data grid you want to filter data. For example, click the Inspection **Inspection** tab.

4   Click the **Customize** tab Customize, then the **Filters** button Filters to open the *Filters* page.

5   Click New 'And' Group to open a filter properties group box (Figure 7-115).
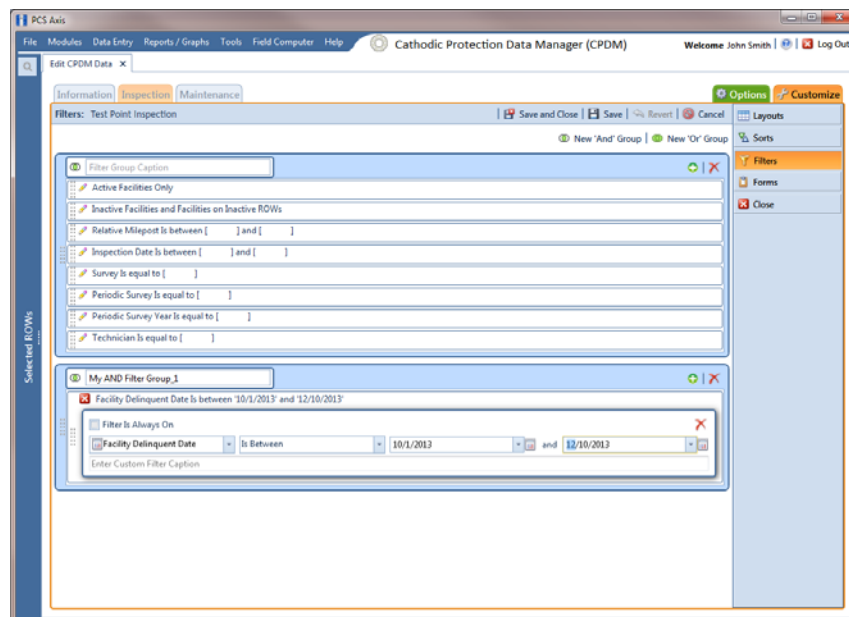
Figure 7-115. Filters

6   Type a name for the filter group in the field **Filter Group Caption**.

7   Use filter selection fields to set up filter criteria. Select a PCS Axis field, operator, and one or more filter conditions.

8   If the AND filter group includes a date filter, such as *Facility Delinquent Date Is Between* shown in Figure 7-115, set a date range using a calendar or dynamic dates in the following manner:

- •   To set a date range using a calendar, click the down arrow in the start date field to open a calendar and select a date. Repeat this step for the end date field.

- •   To set a date range using dynamic start and end dates, click the ⊞ calculator button in the start date field and set up dynamic date properties. Repeat this step for the end date field. Clicking the calculator button opens and closes dynamic date property fields.

9   If you want the filter to remain on for all sessions when working with the data entry grid, click the check box **Filter is Always On**. When this check box is not selected, toggle the filter on and off in the options page using the filter's check box.

10   Type a name for the filter in the field **Enter Custom Filter Caption**.

11   If you want to set up additional filter criteria for the filter group:

   a   Click ⊕ **Add** to open another filter properties group box.

   b   Type a name for the filter in the field **Enter Custom Filter Caption**. Repeat **step 7** through **step 10** to set up filter criteria. Then click the close button ✖ to close the filter group.

12   To move a filter to a different position in the filter group or a filter group to a different position in a group of filters:

   a   Point the mouse at the filter handle ⠿ to change the cursor to a vertical resize cursor ↕.

   b   Drag and drop the filter or the filter group to a new location.

13   Click 💾 **Save**.

NOTE: Clicking the 🖊 edit icon for a particular filter opens that filter's property settings allowing you to change settings as needed.

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14 To apply one or more filters to the data entry grid (Figure 7-116):
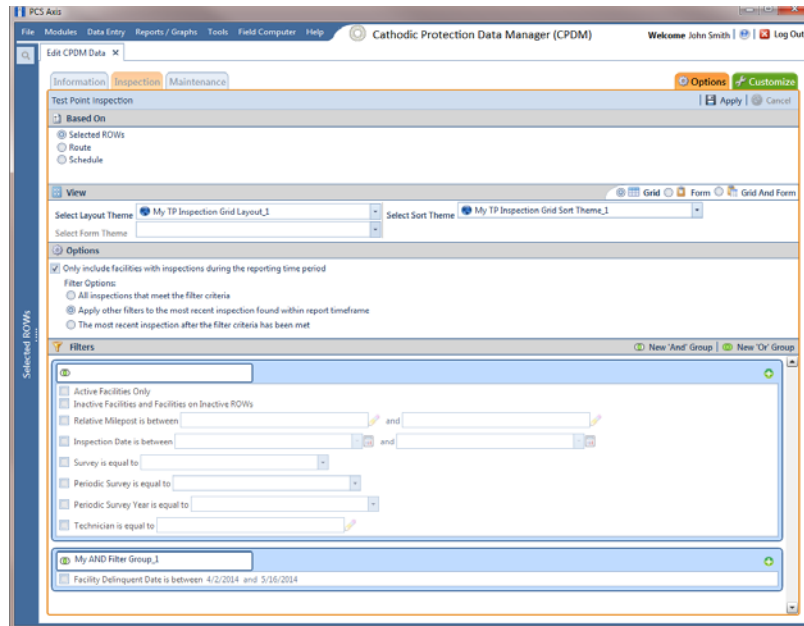
Figure 7-116. Options

a Click the **Options** tab [Options] to open the options page.

b Click the check box for each filter you want to apply. Then click [icon] **Apply** to save changes and return to the data entry grid.

Adding an OR Filter Group

An OR filter group is a named set of one or more filters that affect the data output in a data entry grid in *Data Entry*. Adding an OR filter group produces a subset of records that meet *any* filter condition. PCS Axis processes filters in a filter group in descending order beginning with the filter at the top of the filter group.

To add an OR filter group, follow these steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-117). Click [icon] **Save** to close the window.
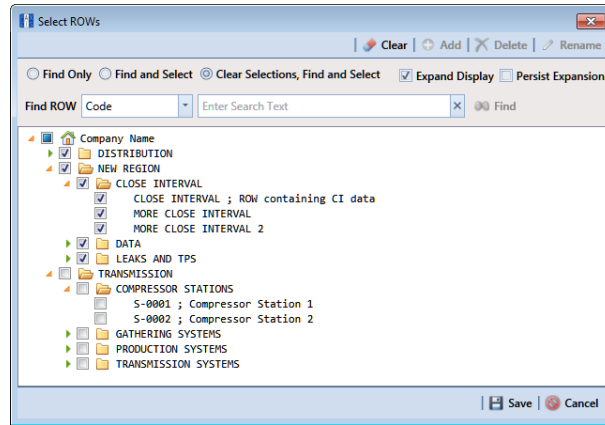
Figure 7-117. Select ROWs

2 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3 Select the data grid you want to filter data. For example, click the `Inspection` **Inspection** tab.

4 Click the **Customize** tab `Customize`, then the **Filters** button `Filters` to open the *Filters* page.

5 Click `New 'Or' Group` **New 'Or' Group** to open a filter properties group box (Figure 7-118).
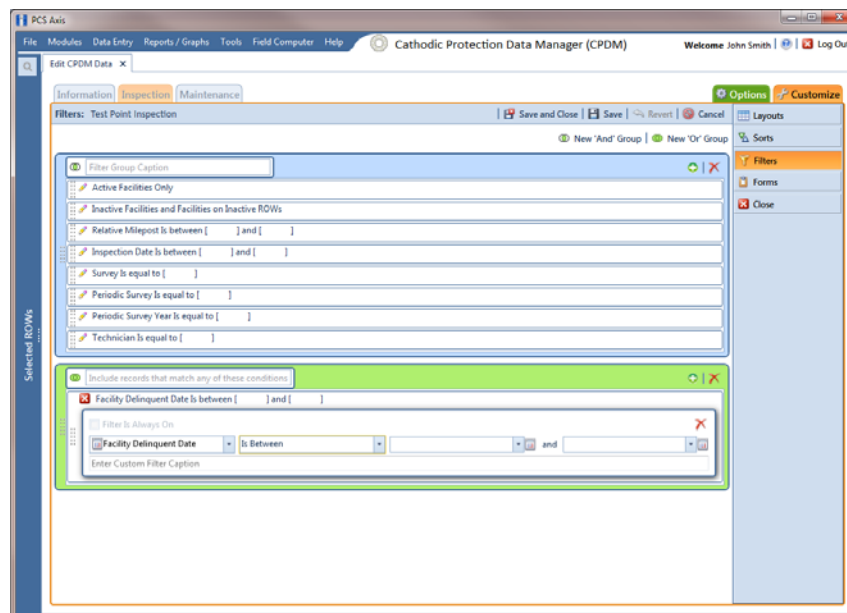
Figure 7-118. Filters

6 Type a name for the filter group in the field **Include records that match any of these conditions**.

7 Use filter selection fields to set up filter criteria. Select a PCS Axis field, operator, and one or more filter conditions.

8 If the OR filter group includes a date filter, such as *Facility Delinquent Date Is Between* shown in Figure 7-118, set a date range using a calendar or dynamic dates in the following manner:

- To set a date range using a calendar, click the down arrow in the start date field to open a calendar and select a date. Repeat this step for the end date field.

- To set a date range using dynamic start and end dates, click the calculator button in the start date field and set up dynamic date properties. Repeat this step for the end date field. Clicking the calculator button opens and closes dynamic date property fields.

9 If you want the filter to remain on for all sessions when working with the selected route, click the check box **Filter is Always On**. When this check box is not selected, toggle the filter on and off in the options page using the filter's check box.

10 Type a name for the filter in the field **Enter Custom Filter Caption**.

11 If you want to set up additional filter criteria for the filter group:

a Click ⊕ **Add** to open another filter properties group box.

b Repeat **step 6** through **step 10** to set up the filter group. Then click the close button ✖ to close the filter group.

12 To move a filter to a different position in the filter group or a filter group to a different position in a group of filters:

a Point the mouse at the filter handle ⠿ to change the cursor to a vertical resize cursor ↕.

b Drag and drop the filter or the filter group to a new location.

> **NOTE:** PCS Axis processes filters in descending order beginning with the filter at the top of the filter group.

13 Click 💾 **Save**.

NOTE: Clicking the 🖉 edit icon for a particular filter opens that filter's property settings allowing you to change settings as needed.

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14 To apply one or more filters to the data entry grid (Figure 7-119):

a Click the **Options** tab ⚙ Options to open the options page.

b Click the check box for each filter you want to apply. Then click 💾 **Apply** to save changes and return to the data entry grid.
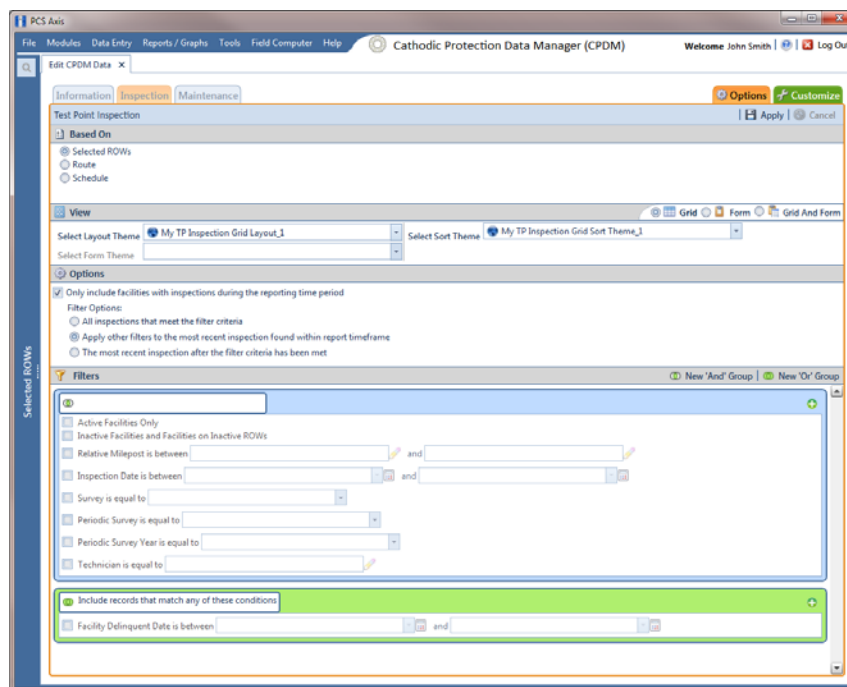
Figure 7-119. Options

Editing and Arranging Filters and Filter Groups
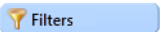
PCS Axis processes filters in a filter group in descending order beginning with the filter at the top of the filter group. Filter groups are processed similarly. Information in this section explains how to edit filter property settings and how to arrange filters and filter groups.

Complete the following steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-120). Click 💾 **Save** to close the window.

Figure 7-120. Select ROWs

2 Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3 Select the data grid you want to filter data. For example, click the `Inspection` **Inspection** tab.

4 Click the **Customize** tab `Customize`, then the **Filters** button `Filters` to open the *Filters* page (Figure 7-121).

5 Click the edit icon to display a filter's property settings.
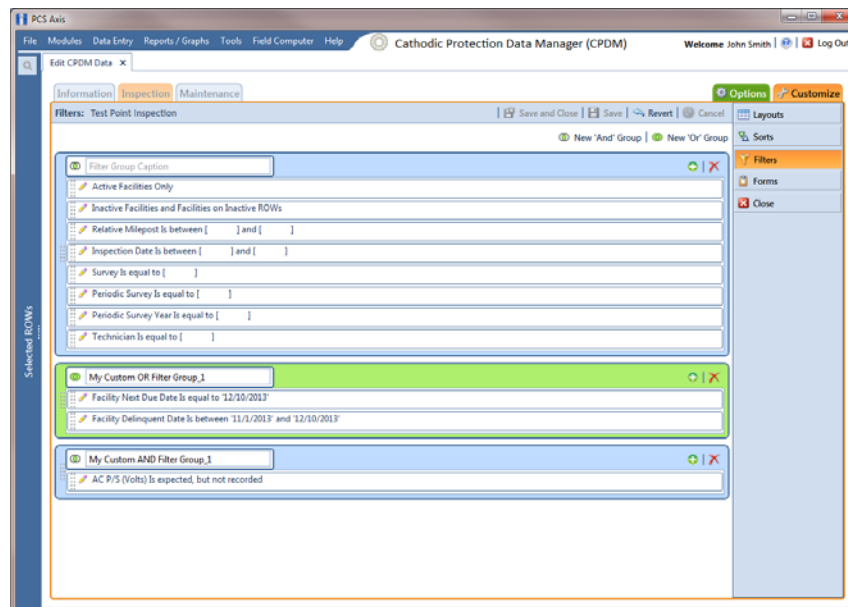
Figure 7-121. Filters

6 To delete a filter in a filter group, click the filter's delete button. Then click **OK** when the *Delete* message displays.

7   To rename a filter, type a description in the filter's name field.

8   To change filter criteria, use filter selection fields to select a PCS Axis field, operator, and one or more filter conditions.

9   To enable a filter for all sessions of the data entry grid, click the check box **Filter is Always On** to place a check mark inside the check box. When this check box is not selected, toggle the filter on and off in the options page using the filter's check box.

10 Click the ✖ close button to close the filter's property settings group box.

11 To move a filter to a different position in a filter group, or to move a filter group to a different position, follow these steps:

    a   Point the mouse at the handle ⁞⁞ of a filter or filter group to display a vertical resize cursor ↕.

    b   Drag and drop the filter or filter group to a new location.

    NOTE: PCS Axis processes filters in descending order beginning with the filter at the top of the filter group.

---

12 Click 💾 **Save**.

13 To apply filter changes to the data entry grid:

    a   Click the **Options** tab ⚙ Options to open the options page.

    b   Click 💾 **Apply** to apply filter changes and return to the data entry grid.

Working with Records

The information in this section explains how to work with various types of records in a data entry grid. Topics include those in the following list:

- *Activating Facility Inspection Fields for Data Entry*

- *Working with Multiple Test Point Potentials* (page 335)

- *Attaching a Document to a Grid Record* (page 340)

- *Working with the Target Structure P/S Field* (page 354)

- *Recording Facility Current Values* (page 358)

- *Linking Rectifiers to ROWs* (page 365)

- *Working with Rectifier Anodes* (page 367)

- *Working with Rectifier Negatives* (page 373)

Activating Facility Inspection Fields for Data Entry

Inspection fields with *Activate* in the field description must first be added and enabled in the facility *Information* grid to allow data entry of inspection readings in the facility *Inspection* grid.

To activate facility inspection fields for data entry, follow these steps:

1   Select one or more pipeline segments in the *Select ROWs* window (Figure 7-122). Select pipeline segments with facilities you want to work with, then click ⊞ **Save** to close the window.
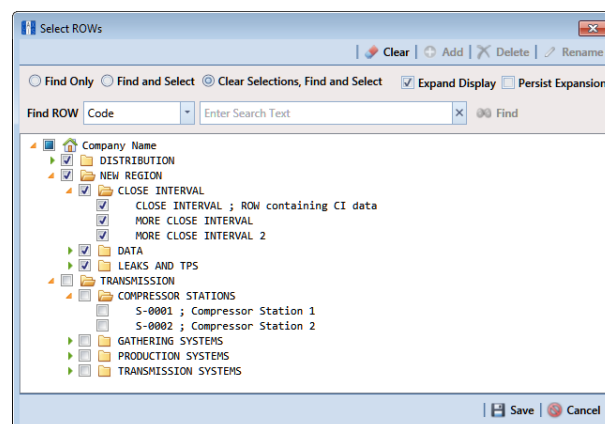
Figure 7-122. Select ROWs

2   Open the *Edit <module> Data* window. For example, click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3   Open the *Information* grid for a facility type. For example, click the **Information** tab [Information] and then a facility type button, such as **Test Point** [Test Point] (Figure 7-123).
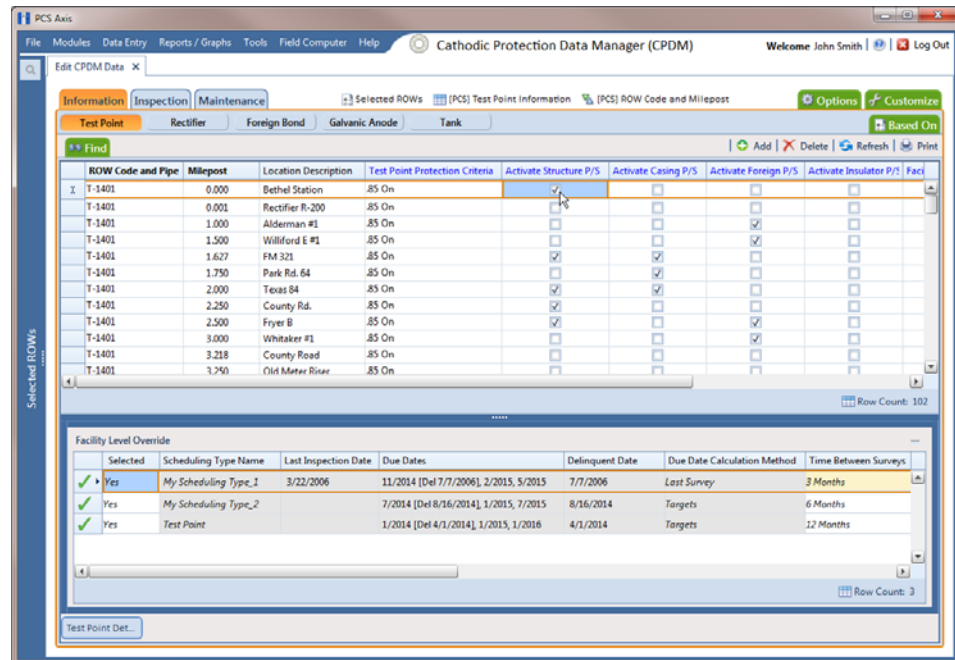
Figure 7-123. Information Grid - Test Point Tab

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5   Click the check box of an *Activate* inspection field for a facility in the grid to place a check mark in the check box. For example, click the check box **Activate Structure P/S (Volts)** for a facility in the grid.

6   Click **Yes** to apply the change when a warning message displays to notify you of a change to the facility's permanent history record.

The inspection field is now available for data entry in the *Inspection* grid for the selected facility. If the inspection field is not present in the Inspection grid, refer to *Adding a Data Grid Layout Theme* (page 317) for information about adding fields in a grid.

NOTE: You can also activate an inspection field in the *Inspection* grid by right-clicking the field and selecting *Activate Item* in the shortcut menu that opens.

Working with Multiple Test Point Potentials

Use the CPDM *Test Point Detail Information* and *Test Point Detail Inspection* mini-grids to manage multiple potential measurements for test point subfacilities linked to a test point facility. These mini-grids function in a similar manner as the rectifier mini-grids when linking rectifier anodes and negatives.

The *Test Point Detail Inspection* mini-grid allows you to select which potential measurement to use for compliance reporting. After selecting a potential measurement for compliance reporting, PCS Axis automatically copies it to the associated test point facility in the *Inspection* grid.

NOTE: The Test Point Detail mini-grids become available for use after enabling the system option *Show Detail Inspection Entry Grid*. When using the optional *Telluric Compensation* feature, the mini-grids display by default and cannot be disabled.

Linking Multiple Subfacilities to a Parent Test Point Facility

The procedure in this section explains how to link multiple subfacilities to a parent test point facility and then select one of the subfacility potential measurements (survey readings) for compliance reporting.

The process begins with adding and linking new subfacility records to a parent test point facility in the *Test Point Detail Information* mini-grid. After adding these records, they are then available for use in the *Test Point Detail Inspection* mini-grid.

Complete the following steps:

1   Select one or more pipeline segments in the *Select ROWs* window (Figure 7-124). Select pipeline segments with test point facilities you want to work with, then click ▦ **Save** to close the window.
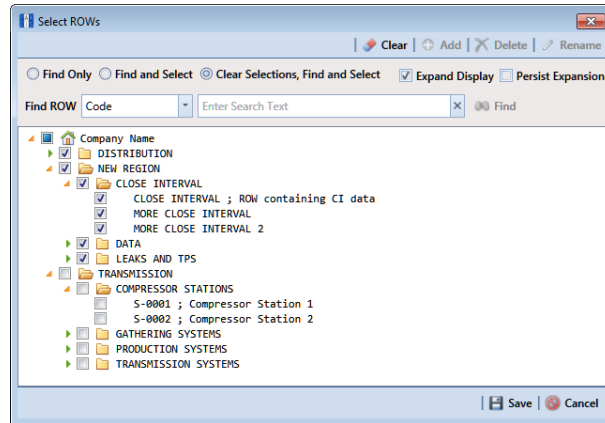
Figure 7-124. Select ROWs

2 Click **Data Entry** > **Edit CPDM Data** to open the *Edit CPDM Data* window.

3 Click **Test Point** [Test Point] and then the **Information** tab [Information] to open the *Information* grid.

4 If the *Test Point Detail Information* mini-grid is not visible, double-click the **Test Point Det...** button [Test Point Det...] at the bottom of the window to open the mini-grid (Figure 7-125).
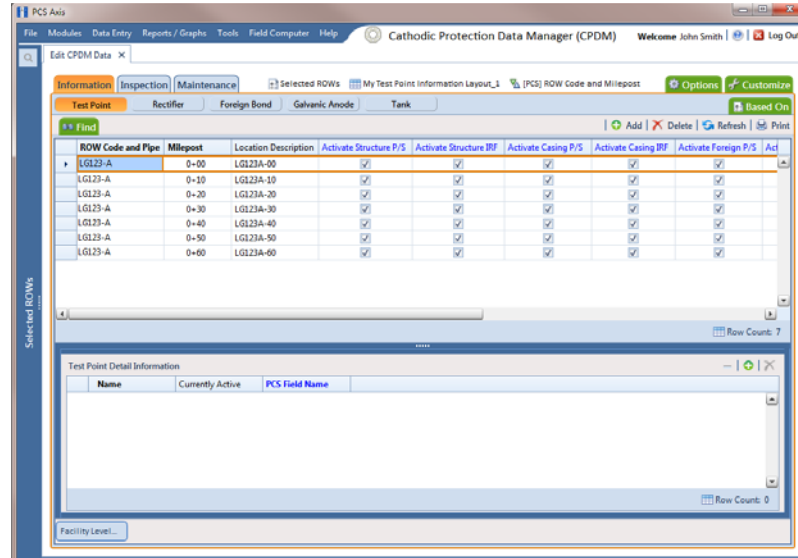
Figure 7-125. Test Point Detail Information

5 To add and link new subfacility records to a parent test point facility in the *Information* grid, follow these steps:

a Select a test point facility in the *Information* grid.

b Click ⊕ **Add** in the *Test Point Detail Information* mini-grid.

c In the pop-up *Add Record* dialog box (Figure 7-126), type a unique name for the new subfacility in the **Name** field. This field supports up to 100 alphanumeric characters. Fields requiring information include a ⊗ icon. You must enter information in the required fields before the record will be added.
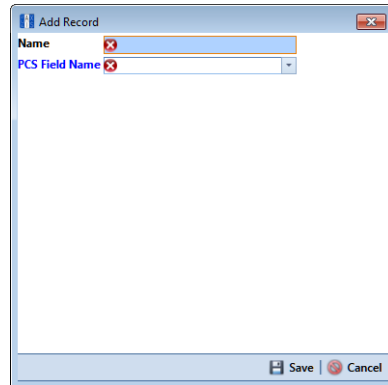
Figure 7-126. Add Record Dialog Box

IMPORTANT: To prevent adding duplicate subfacility records in the system, it is important to enter a unique name in the *Name* field for each subfacility record. Do not use the default name in the *Name* field or leave it empty (blank).

d Click the field **PCS Field Name** and select the name of a PCS field. Select a PCS field name that matches the type of potential measurement associated with the new subfacility, such as *Structure P/S*.

e Click ▣ **Save** to add the record and close the window.

f Repeat **step 5 a** through **e** for each new subfacility record you want to add and link to the currently selected test point facility record.

NOTE: The *Currently Active* check box indicates when a subfacility is active or inactive. A check mark inside the check box indicates an active subfacility and can also be included in *Prompts* sent to the *Allegro Field Computer*. When the check box is empty, this indicates an inactive subfacility, such as a damaged subfacility or one that has been replaced.

6 Complete the following steps to add potential measurements (survey readings) for subfacilities in the *Test Point Detail Inspection* mini-grid, and then select one of these for compliance reporting:

a Click the **Inspection** tab ⬚ Inspection to open the *Inspection* grid.

b If the *Test Point Detail Inspection* mini-grid is not visible, double-click the **Test Point Det...** button ⬚ Test Point Det... at the bottom of the window to open the mini-grid.

c Select a test point facility in the *Inspection* grid that includes subfacilities you want to add potential measurements (Figure 7-127).
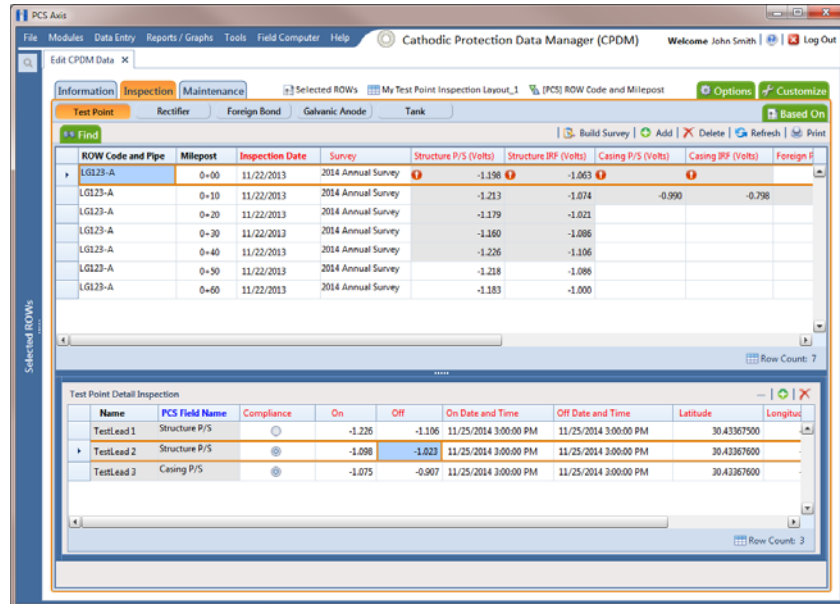
Figure 7-127. Test Point Detail Inspection Mini-Grid

d If potential measurements have not previously been added in the mini-grid, click ⊕ **Add** to enable the mini-grid for data entry.

e Select a subfacility in the mini-grid. Then add potential measurements and other related survey data in appropriate mini-grid fields. Repeat this step as needed for other linked subfacilities in the mini-grid.

f To select a potential measurement to use for compliance reporting, click the **Compliance** option button in the mini-grid associated with the subfacility record.

g Based on your PCS Axis license, the *Compliance* field may be named *Selected Reading* instead.

h Click 🔄 **Refresh** to copy the selected potential measurement to the linked test point facility in the *Inspection* grid.

i   When a value for a dependent field has been updated in a data entry grid, a ⬤ notification icon displays in the derived field indicating the value has changed and the data entry grid should be refreshed. Clicking the ⟳ *Refresh* button updates all derived values and removes the notification icon. See *Working with Derived Fields* (page 226) for more information.

Attaching a Document to a Grid Record

When you want to attach a document to a record in the grid, use the *Attached Document* field to link or embed a file or webpage address to a ROW, facility, inspection, or maintenance record. Supported file types include image, video, HTML, XML, music, and text files (such as Microsoft Word, WordPad, Notepad, or PowerPoint files).

As an example, you can attach an image of a survey site or damaged facility; a document describing your company's safety procedures; or a document identifying a manufacturer's specification for a piece of equipment.

Linking a document identifies the file location on a local computer, company network, FTP site, or webpage on the Internet. Linking documents stored on a local computer are accessible only from that computer. Embedding a document stores a copy of the file in the PCS Axis database.

NOTE: Storing copies of documents in the PCS Axis database increases the size of the database.

If the file type of an attached document is associated with a default software program on the local computer, you can preview the file in the *Preview Attached Documents* window. Additionally, clicking *Open* opens the attached document for editing or viewing purposes.

Editing an embedded document applies changes only to the copy stored in the PCS Axis database; changes do not apply to the source file stored outside of PCS Axis. Likewise, editing a source file applies changes only to the source file, not the copy stored in PCS Axis.

For more information, continue with one of the following topics:

- *Adding an Attached Document Field in the Grid* (page 341)

- *Attaching a Document to a ROW, Facility, Inspection, or Maintenance Record* (page 345)

- *Viewing an Attached Document* (page 351)

NOTE: For information about how to attach a document to a pipeline record, see*Working with Pipeline Records* (page 139).

Adding an Attached Document Field in the Grid

Each of the following fields allow you to attach a document to a record in the grid. If any of these fields are not present in the grid, use the procedure in this section to add one or more fields as needed.

- *ROW Attached Documents*: add this field in the *Information*, *Inspection*, or *Maintenance* grid if you plan to attach a document to a ROW record.

- *Facility Attached Documents*: add this field in the *Information*, *Inspection*, or *Maintenance* grid if you plan to attach a document to a facility record.

- *Inspection Record Attached Documents*: add this field in the *Inspection* grid if you plan to attach a document to an inspection record.

- *Maintenance Record Attached Documents*: add this field in the Maintenance grid if you plan to attach a document to a maintenance record.

Complete the following steps:

1   Select one or more pipeline segments in the *Select ROWs* window (Figure 7-128). Click 💾 **Save** to close the window.
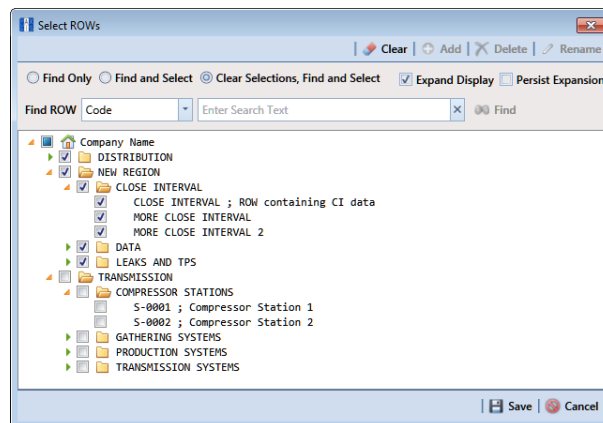
Figure 7-128. Select ROWs

2   Click **Data Entry** > **Edit** <module> **Data**, such as *Edit CPDM Data.* If present, click a facility type button, such as *Test Point* in CPDM or *Coupons* in ICM.

3   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

4   Based on the attached document field you want to add, complete one of the following steps to open the grid:

   a   To add the attached document fields *Facility Attached Documents* and/or *ROW Attached Documents* in the Information, Inspection, or Maintenance grid, click the **Information**, **Inspection**, or **Maintenance** tab to open the grid.

b To add the field *Inspection Record Attached Documents* in the Inspection grid, click the **Inspection** tab Inspection to open the grid.

c To add the field *Maintenance Record Attached Documents* in the Maintenance grid, click the **Maintenance** tab Maintenance to open the grid.

5 Click the **Customize** tab Customize to view the *Layouts* page.

6 Click the down arrow in **Select Layout Theme** and select a layout theme in the selection list.

7 Type **attached** in the search field of the left pane to display a list of attached document fields available for selection.

8 To add the fields *Facility Attached Documents* and/or *ROW Attached Documents* in the Information, Inspection, or Maintenance grid, follow these steps:

a Click the check box for the fields **Facility Attached Documents** and/or **ROW Attached Documents** in the left pane of the window (Figure 7-129).

b Click the top arrow button ⊳ to move selected fields to the right pane. The grid includes all fields listed in the right pane. Click Save.

NOTE: Double-clicking a field in the left pane also moves it to the right pane. If you want to remove a field in the right pane, double-click the field to move it back to the left pane. Fields with a lock icon 🔒 are required and cannot be removed.

Figure 7-129. Layouts

9 To add the field *Inspection Record Attached Documents* in the Inspection grid, complete the following steps:

    a Click the check box for the field **Inspection Record Attached Document** in the left pane of the window (Figure 7-130).

    b Click the top arrow button ⊙ to move the field to the right pane. The grid includes all fields listed in the right pane. Click 💾 **Save**.

NOTE: Double-clicking a field in the left pane also moves it to the right pane. If you want to remove a field in the right pane, double-click the field to move it back to the left pane. Fields with a lock icon 🔒 are required and cannot be removed.
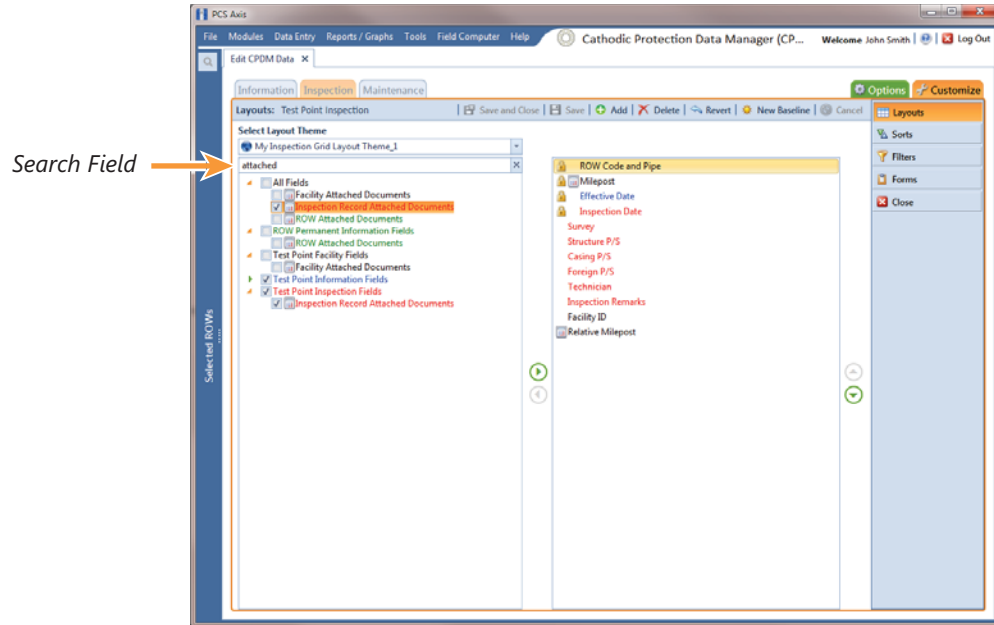
Figure 7-130. Layouts

10 To add the field *Maintenance Record Attached Documents* in the Maintenance grid, complete the following steps:

a Click the check box for the field **Maintenance Record Attached Document** in the left pane of the window (Figure 7-131).

b Click the top arrow button ![arrow] to move the field to the right pane. The grid includes all fields listed in the right pane. Click ![save] **Save**.

NOTE: Double-clicking a field in the left pane also moves it to the right pane. If you want to remove a field in the right pane, double-click the field to move it back to the left pane. Fields with a lock icon ![lock] are required and cannot be removed.

Search Field
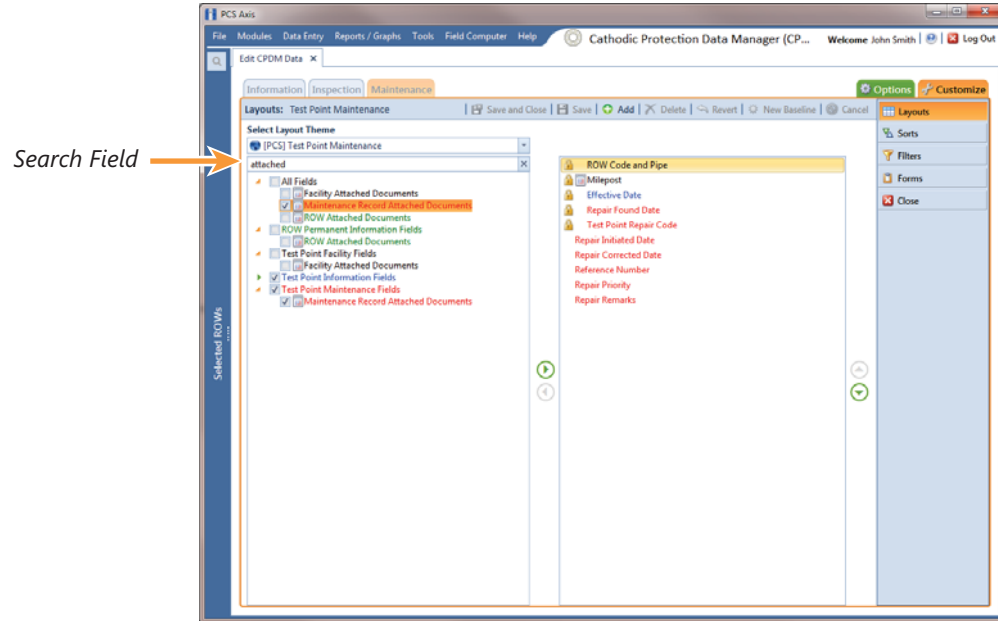
Figure 7-131. Layouts

11 To apply the layout theme in the grid, follow these steps:

a Click the **Options** tab [Options] to open the options page.

b Click the down arrow in **Select Layout Theme** and select the layout theme that includes attached document fields.

c Click [save] **Apply** to apply changes and return to the grid.

Attaching a Document to a ROW, Facility, Inspection, or Maintenance Record

Information in this section explains how to attach a document to a record in the grid using the options *Link Document* and *Embedded Document*.

NOTE: If the option *Disable Link Attachments* has been enabled in system Options by your company's system administrator, the option *Link Document* is unavailable for selection. Use the option *Embedded Document* instead when attaching a document to a record. This places a copy of the document in the PCS Axis database.

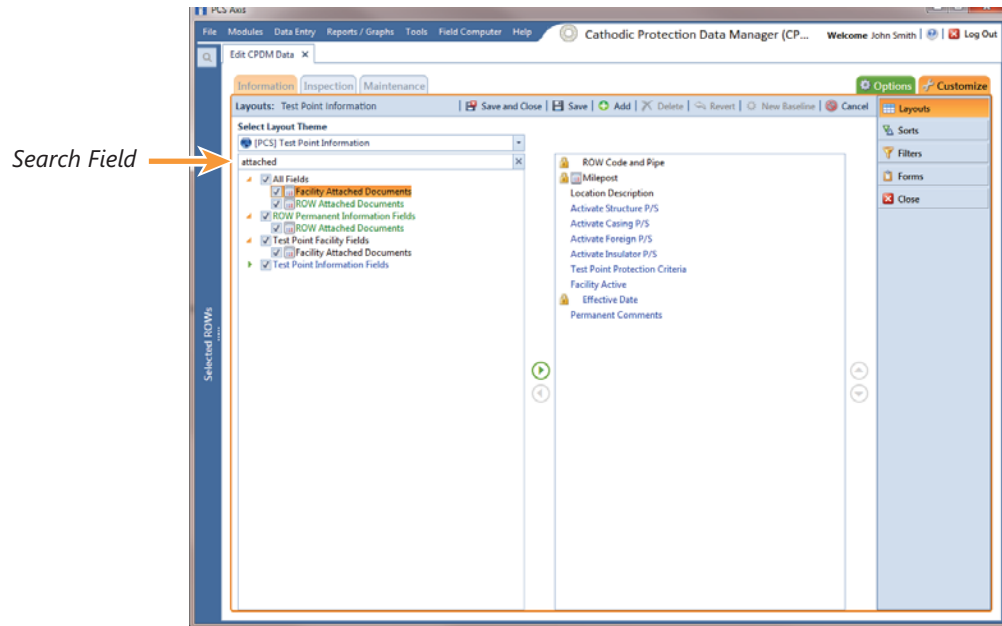Complete the following steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-132). Click [save] **Save** to close the window.

Figure 7-132. Select ROWs

2 Click **Data Entry** > **Edit** <module> **Data**, such as *Edit CPDM Data*. If present, click a facility type button, such as *Test Point* in CPDM or *Coupons* in ICM.

3 Based on the type of record you want to attach a document, complete one of the following steps:

a To attach a document to a ROW or facility record, click the **Information** tab `Information` to open the *Information* grid.

b To attach a document to an inspection record, click the **Inspection** tab `Inspection` to open the *Inspection* grid.

c To attach a document to a maintenance record, click the **Maintenance** tab `Maintenance` to open the *Maintenance* grid.

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Click the edit icon in the **Attached Documents** field for the grid record you plan to attach a document (Figure 7-133).
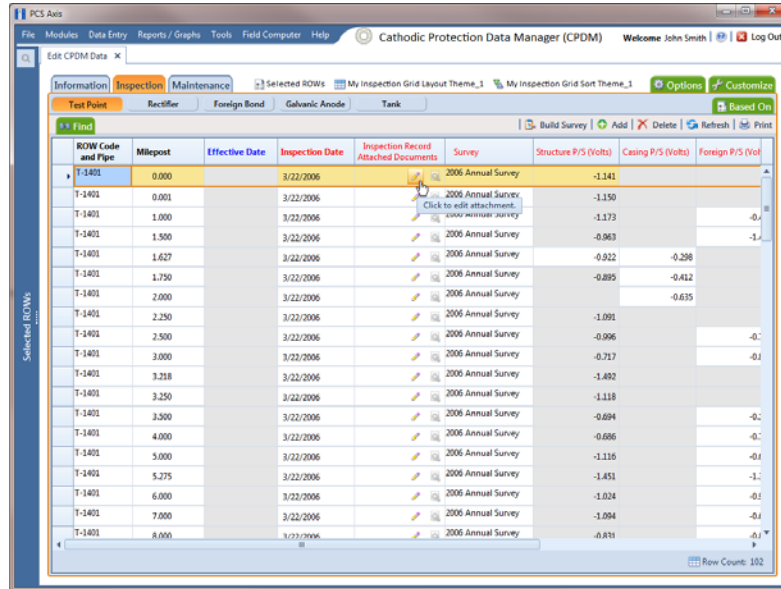
Figure 7-133. Attached Document Field

6 When the *Maintain Attached Documents* dialog box opens, click ⊕ **Attach** and then select the option **Link Document** or **Embedded Document**.

Select *Link Document* if you plan to link to a document on a local computer or company network, or want to add a link to a web page on the Internet.

Select *Embedded Document* if you want to store a copy of an attached document in the PCS Axis database.

NOTE: Storing copies of attached documents in the database increases the size of the database.

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7   If you selected *Link Document* in **step 6** and want to link to a file on a local computer or company network(Figure 7-134), follow these steps:
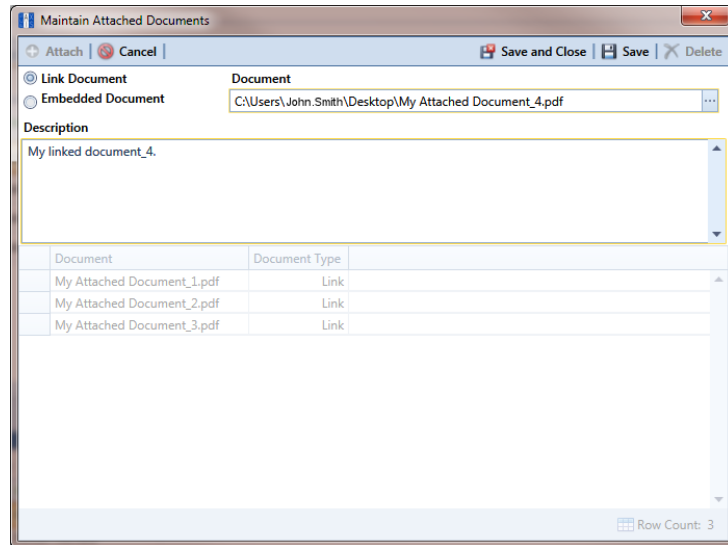
Figure 7-134. Maintain Attached Documents

a   Click the ellipsis button **...** in the **Document** field to open the *Link File* dialog box.

b   Navigate to the file and select it. Click **Open** to link to the file and close the dialog box.

c   Type a description for the linked file in the **Description** field. When a description is not provided, PCS Axis uses the filename of the linked document as the description.

d   Click ⊞ **Save**, then click **OK** when the following message displays:

Linked Document won't be replicated. Do you want to continue?

NOTE: Linked documents are not copied and stored in the PCS Axis database as noted in the previous message. To store a copy of an attached document in the database, use the *Embedded Document* option instead.

---

e   When you finish attaching documents, click the close button [X] to close the window and return to the grid.

> **NOTE:** A list of attached documents and whether they are linked or embedded displays in the window. Selecting an item in the list displays its location in the *Document* field.

8 If you selected *Link Document* in **step 6** and want to add a link to a web page on the Internet (Figure 7-135), follow these steps:
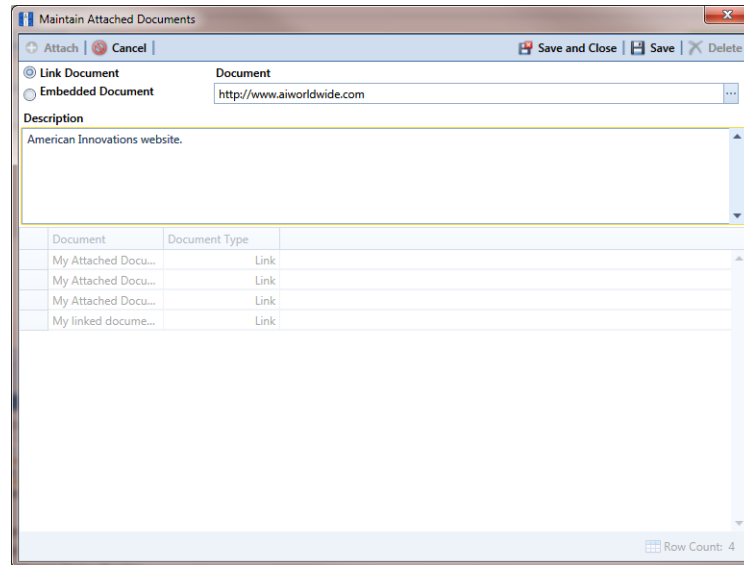
Figure 7-135. Maintain Attached Documents

a Type an Internet address in the **Document** field. For example, type http://www.aiworldwide.com in the field.

b Type a description for the link in the **Description** field. When a description is not provided, PCS Axis uses the filename of the linked document as the description.

c Click 🖫 **Save**, then click **OK** when the following message displays:

Linked Document won't be replicated. Do you want to continue?

> **NOTE:** Linked documents are not copied and stored in the PCS Axis database as noted in the previous message. To store a copy of an attached document in the database, use the *Embedded Document* option instead.

d When you finish attaching documents, click the close button to close the window and return to the grid.

> **NOTE:** A list of attached documents and whether they are linked or embedded displays in the window. Selecting an item in the list displays its location in the *Document* field.

9 If you selected *Embedded Document* in **step 6** (Figure 7-136), complete the following steps:
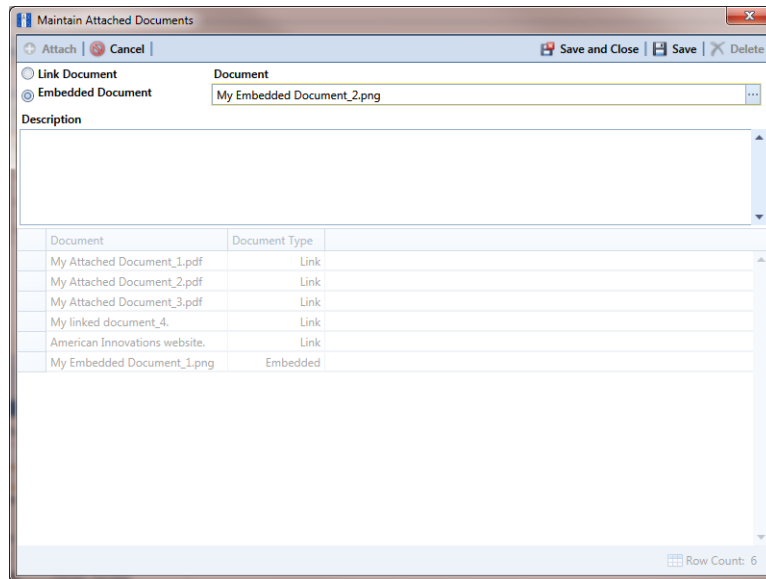
Figure 7-136. Maintain Attached Documents

a Click the ellipsis button **...** in the **Document** field to open the *Embed File* dialog box.

b Navigate to the file and select it. Click **Open** to embed a copy of the file and close the dialog box.

c Type a description for the embedded file in the **Description** field. If a description is not provided, PCS Axis uses the filename of the embedded file as the description.

d Click **Save**, then click **OK** when the following message displays:

Local changes made to embedded documents won't be saved into PCS. Do you want to continue?

> **NOTE:** Editing an embedded document applies changes only to the copy stored in the PCS Axis database; changes do not apply to the source file stored outside of PCS Axis. Likewise, editing a source file applies changes only to the source file, not the copy stored in PCS Axis.

e When you finish attaching documents, click the close button to close the window and return to the grid.

> **NOTE:** A list of attached documents and whether they are linked or embedded displays in the window. Selecting an item in the list displays its location in the *Document* field.

Viewing an Attached Document

If the file type of an attached document is associated with a default software program on the local computer, you can preview the file in the *Preview Attached Documents* window. Additionally, clicking *Open* opens the attached document for editing or viewing purposes.

To view or open an attached document, follow these steps:

1 Select one or more pipeline segments in the *Select ROWs* window (Figure 7-137). Click **Save** to close the window.
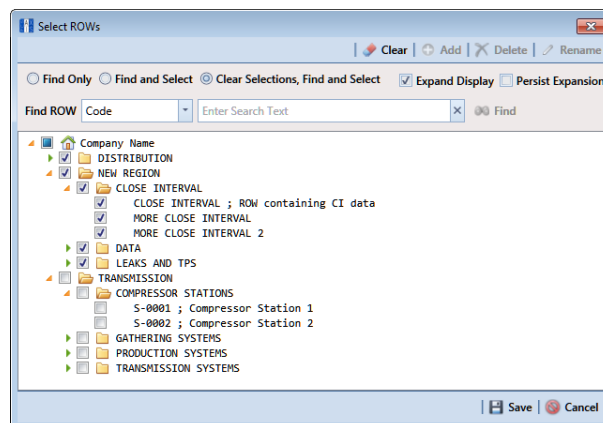
Figure 7-137. Select ROWs

2 Open the data entry grid that includes the grid record with the attached document. For example, click **Data Entry** > **Edit CPDM Data** > **Test Point** > **Inspection** to open the *Test Point Inspection* grid.

3 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

4 Click the preview icon for the grid record with the attached document (Figure 7-138).
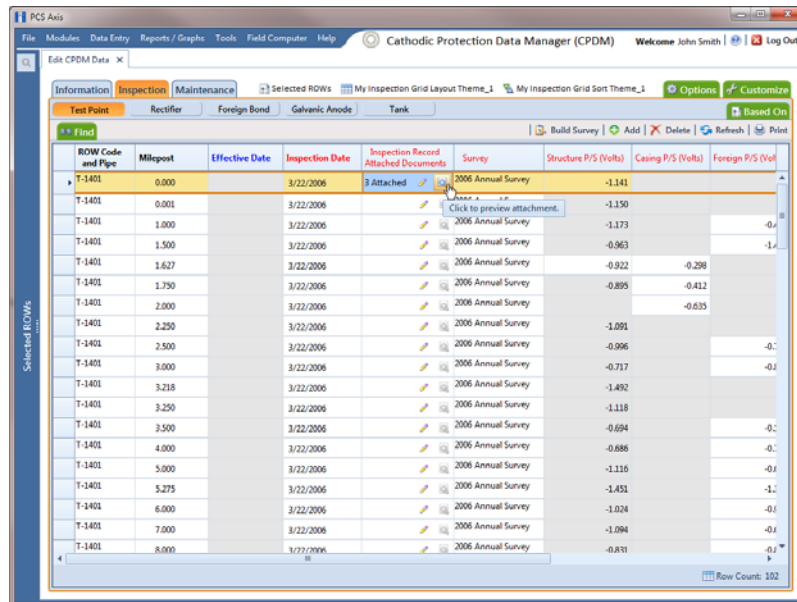
Figure 7-138. View Attached Document

5 When the *Preview Attached Documents* window opens, select a file in the list on the left side of the window to preview the file (Figure 7-139).
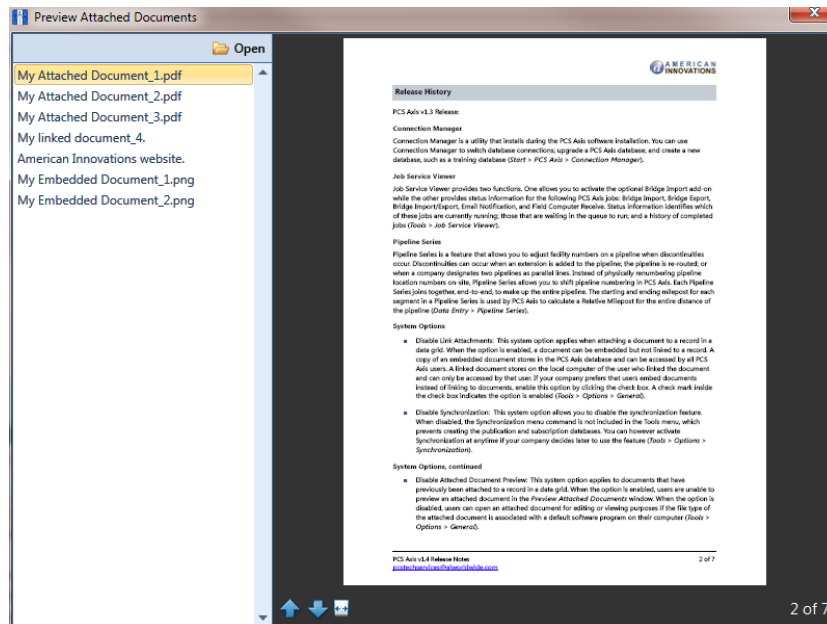
Figure 7-139. Preview Attached Documents

6 If the file type of the attached document is associated with a default software program on the local computer, click 📁 **Open** to open the file.

7 Click the close button [✗] to close the *Preview Attached Documents* window.

NOTE: When you open and then edit an embedded document, changes apply only to the copy stored in the PCS Axis database; changes do not apply to the source file stored outside of PCS Axis. Likewise, editing the source file applies changes to the source file, not the copy stored in the PCS Axis database.

Working with the Target Structure P/S Field
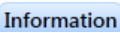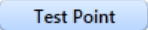
The *Target Structure P/S* field is a system-generated field available in the CPDM Test Point Inspection grid. The field is gray to indicate its contents are system-generated. *Target Structure P/S* is used by PCS Axis to calculate a target reading with a minimum pipe-to-soil (P/S) for meeting criteria. The target reading is calculated based on your selected protection criterion and information in other fields (Table 7-1, page 355).

The default setting for *Target Structure P/S* is -0.850. To change the setting, follow these steps:

1   Click the **Select ROWs** button 🔎 to open the *Select ROWs* window (Figure 7-140). Select one or more pipeline segments with facilities you want to work with, then click 💾 **Save** to close the window.
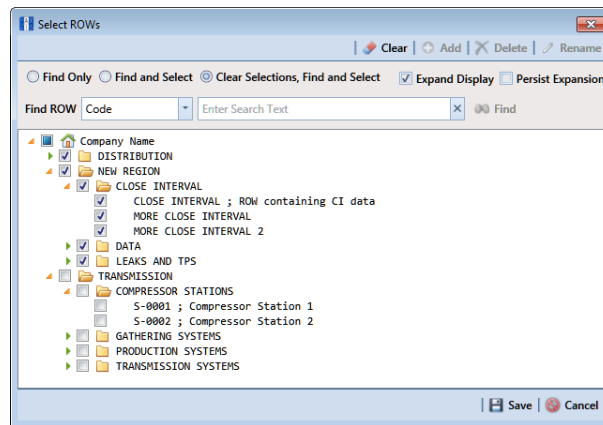
Figure 7-140. Select ROWs

2   Open the *Edit CPDM Data* window. Click **Data Entry** > **Edit CPDM Data**.

3   Open the *Test Point Information* grid. Click the **Information** tab `Information` and then the **Test Point** button `Test Point` (Figure 7-141).
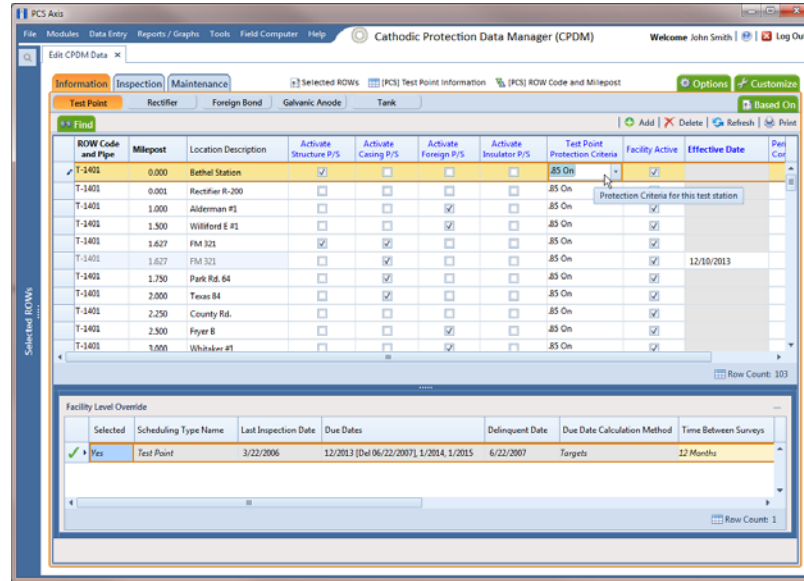
Figure 7-141. Test Point Information Grid

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5   Select the field **Test Point Protection Criteria** for a test point in the grid. Click the down arrow and select a protection criterion in the selection list. Repeat this step for other test points as needed.

6   Set up other fields used to calculate *Target Structure P/S* according to the information in Table 7-1. Based on how your data entry grids are arranged, fields may be in the *Test Point Information* or *Inspection* grid.

Table 7-1 describes how *Target Structure P/S* is calculated for each protection criterion. Each protection criterion identifies fields required for calculating *Target Structure P/S*. Equations with pipe brackets (|) represent absolute values.

Table 7-1. Calculating Target Structure P/S

Protection Criterion	Target Structure P/S Calculation
.85 On (default)	–0.850 V
.85 IRF	–0.850 – | Structure P/S – Structure IRF |
	Example: –0.850 – | –1.200 – –0.800 | = –1.250
	Note: The value in the field User IR Correction (if any) is used instead of the | Structure P/S – Structure IRF | equation.

Table 7-1. Calculating Target Structure P/S (continued)

Protection Criterion	Target Structure P/S Calculation
100 mV	Native P/S – 0.100 – | Structure P/S – Structure IRF | **Example:**–0.550 – 0.100 – | –1.200 – –0.800 | = –1.050 **Note:**The fields Native P/S and Native Date can be included with any survey regardless of how old. PCS Axis always finds the most recent native reading and date, and the most recent pair of structure "on/off" readings (Structure P/S and Structure IRF). This means if the current-year survey includes only "on" readings, PCS Axis uses the last "on/off" reading and native date. This is the case until a new "on/off" reading is taken.
300 mV	This is no longer recognized by NACE RP0169 or DOT regulations.
Ref Read	Add the field Test Point Reference P/S in the grid when using "Ref Read" (reference reading) protection criterion.
Ag/AgCl	Functions the same as ".85 On" but uses –0.800V instead. Use this protection criterion for off-shore (saltwater) or tank "on" readings when using silver/silver chloride half cell.

The field Target Structure IRF is used for a facility to meet criteria and the calculated minimum value for the Structure IRF field.

.85 On criteria	Calculation: Target Structure IRF = Null

.85 IRF (off) and 100mV criteria	Structure IRF can be compared to Target Structure IRF to determine if the inspection is in compliance. If Structure IRF is more negative than Target Structure IRF, the test point is in compliance.
	
	• Calculation for .85 IRF Criteria: Target Structure IRF = -.85.
	
	  Target Structure P/S is calculated for an inspection that has a Structure IRF.
	
	• Calculation for 100mV Criteria: Target Structure IRF = Native P/S - 0.1. Native Date must be added in the grid.
	
	  Target Structure IRF is calculated for an inspection that has a Structure IRF.
	
	  Native P/S = Most recent Native P/S before the date of the Structure P/S and Structure IRF.

Table 7-1. Calculating Target Structure P/S (continued)

Protection Criterion	Target Structure P/S Calculation
.85 On	Calculation: Target Structure IRF = Null
300 mV	Calculation: Target Structure IRF = Null
Ref Read	Calculation: Structure P/S = Null

Recording Facility Current Values

Information in this section identifies required and optional fields for recording facility current values in data entry grids:

- *Recording Rectifier Current*

- *Recording Pipeline Current* (page 361)

- *Recording Bond Current* (page 364)

Recording Rectifier Current

Information in Table 7-2 identifies the fields required for recording rectifier current (rectifier DC amps and volts; rectifier anode output current, and rectifier negative output current).

Table 7-2. Recording Rectifier Current Values

Facility & Current Type	Description
Rectifier: DC Amps and DC Volts	**1** Add the following fields in the *Rectifier Information* grid: • *Activate Rectifier Output Current Found* • *Activate Rectifier Output Volts Found* As an option you can also add the following fields in the *Information* grid: • *Rectifier Output Shunt Factor (A/mV)*: use this fields to enter the amps value of the shunt conversion factor. Enter as a whole number value. Together the value in this field and in the *Rectifier Output Shunt Rating (mV/A)* field make up the shunt conversion factor. • *Rectifier Output Shunt Rating (mV/A)*: use this field to enter the millivolts value of the shunt conversion factor. Enter as a whole number value. Together the value in this field and in the *Rectifier Output Shunt Factor (A/mV)* field make up the shunt conversion factor. **2** Add the following fields in the *Rectifier Inspection* grid: • *Rectifier Output Current Found (Amps)* • *Rectifier Output Volts Found (Volts)* • *Rectifier Output Current Left (Amps)* • *Rectifier Output Volts Left (Volts)* • *Rectifier Current Adjusted*

Table 7-2. Recording Rectifier Current Values (continued)

Facility & Current Type	Description
Rectifier: Anode Output Current	Add the field *Number of Impressed Anodes* in either the *Rectifier Information* or *Inspection* grid. The *Rectifier Anode Information* mini-grid in the *Rectifier Information* grid automatically includes the following fields for entering anode data: • *Impressed Anode Current Minimum (Amps)* • *Impressed Anode Current Maximum (Amps)* • *Impressed Anode Shunt Rating (mV/A)* • *Impressed Anode Shunt Resistance (Ohms)* • *Impressed Anode Shunt Factor (A/mV)* See *Working with Rectifier Anodes* (page 367) for more information.
Rectifier: Negative Output Current	Add the field *Number of Negatives* in either the *Rectifier Information* or *Inspection* grid. The *Rectifier Negative Information* mini-grid in the *Rectifier Information* grid automatically includes the following fields for entering rectifier negative data: • *Negative Current Min (Amps)* • *Negative Current Max (Amps)* • *Negative Current Shunt Rating (mV/A)* • *Negative Current Shunt Resistance (Ohms)* • *Negative Shunt Factor (A/mV)* See *Working with Rectifier Negatives* (page 373) for more information.

Recording Pipeline Current

Information in Table 7-3 identifies the fields required for recording pipeline current values.

Table 7-3. Recording Pipeline Current

Facility & Current Type	Description
Pipeline Current: IR Drop Test Station	**1** Add the following fields in the *Test Point Information* grid. Enable "activate" fields for use. • *Activate Pipeline Current On - mV Drop* • *Activate Pipeline Current Direction* • *Pipeline Current Calibration Factor (A/mV)*: Enter the amps value of the current factor when using the resistance of the pipeline to measure current flow on the pipeline. Enter value as whole number. The value is used in the pipeline current calculation. • *Pipeline Current Measurement Ratio (mV/A)*: Enter the current factor when using the resistance of the pipeline to measure current flow on the pipeline. Enter value as whole number. The value is used in the pipeline current calculation. **2** Add the following fields in the *Test Point Inspection* grid: • *Pipeline Current On (Amps)*: Enter amps reading for pipeline current measured with rectifier on. • *Pipeline Current Direction*: Use this field to describe the direction of the current, such as upstream or downstream.

Table 7-3. Recording Pipeline Current

Facility & Current Type	Description
Pipeline Insulator Current: Shunt for Insulated Flange	**1** Add the following fields in the *Test Point Information* grid. Enable "activate" fields for use. • *Activate Insulator Current* • *Insulator Shunt Factor (A/mV)* • *Insulator Shunt Rating (mV/A)* **2** Add the field *Insulator Current (Amps)* in the *Test Point Inspection* grid. Use the field *Insulator Current (Amps)* to enter the amps value of the insulator shunt reading. PCS Axis uses the reading and the value in the field *Insulator Shunt Rating (mV/A)* to calculate and enter a value in the field *Insulator Shunt Factor (A/mV)*.
Pipeline Insulator P/S	**1** Add and enable the field *Activate Insulator P/S* in the *Test Point Information* grid. **2** Add the field *Insulator P/S* in the *Test Point Inspection* grid. Use the *Insulator P/S* field to enter a potential reading for the other side of an insulated flange, relative to the soil. This type of reading is also referred to as an "insulator-to-soil" potential reading. If the protection criteria option *.85 IRF* or *100mV* is selected in the field *Test Point Protection Criteria*, add and enable the field *Activate Insulator IRF* in the *Test Point Information* grid and then add the field *Insulator IRF (Volts)* in the *Test Point Inspection* grid.

Table 7-3. Recording Pipeline Current

Facility & Current Type	Description
Pipeline Galvanic Current: Shunt for Galvanic Anode	**1** Add the following fields in the *Galvanic Anode Information* grid. Enable "activate" fields for use. • *Activate Galvanic Current* • *Galvanic Anode Shunt Factor (A/mV)* • *Galvanic Anode Shunt Rating (mV/A)* **2** Add the field *Galvanic Current (Amps)* in the *Galvanic Anodes Inspection* grid. Use the field *Galvanic Anode Current (Amps)* to enter the amps value of the galvanic anode shunt reading. PCS Axis uses the reading and the value in the field *Galvanic Anode Shunt Rating (mV/A)* to calculate and enter a value in the field *Galvanic Anode Shunt Factor (A/mV)*.

Recording Bond Current

Table 7-4 identifies the fields required for recording bond current using the *Bond Information* and *Inspection* data entry grids (*Data Entry > Edit CPDM Data > Foreign Bond*).

Table 7-4. Recording Bond Current Values

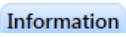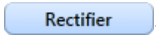| Facility Type	Description
Bond Current	**1** Add the following fields in the *Foreign Bond Information* grid: • *Bond Shunt Rating* • *Bond Shunt Resistance* Use the field *Bond Shunt Rating* to enter the amps reading of the bond conversion shunt factor. Use the field *Bond Shunt Resistance* to enter the millivolt (mV) reading of the bond conversion factor. Readings in both of these fields automatically update the field *Bond Shunt Factor*. **2** Add the following fields in the *Foreign Bond Inspection* grid: • *Bond Current Found* • *Bond Current Left* • *Bond Current Adjusted* Use the field *Bond Current Found* to enter the current reading for a foreign bond as it is found (before adjusting the current). The value automatically copies to the field *Bond Current Left*. To adjust the *Bond Current Found* reading, click the check box *Bond Current Adjusted* and then type the adjusted reading in the field *Bond Current Left*.

Linking Rectifiers to ROWs

When the same rectifier provides current to one or more pipeline segments, or parallel lines entered in the hierarchy as pipeline segments, use the *ROW Links* mini-grid to link the rectifier to each pipeline segment or parallel line. This allows you to enter rectifier information once instead of re-entering the same rectifier information for each pipeline segment or parallel line. This in turn reduces the number of database records and the potential for data entry errors.

To link a rectifier to one or more pipeline segments, follow these steps:

1   Click the **Select ROWs** button [🔍] to open the *Select ROWs* window (Figure 7-142). Select the pipeline segment(s) with the rectifier you want to work with, then click [💾] **Save** to close the window.
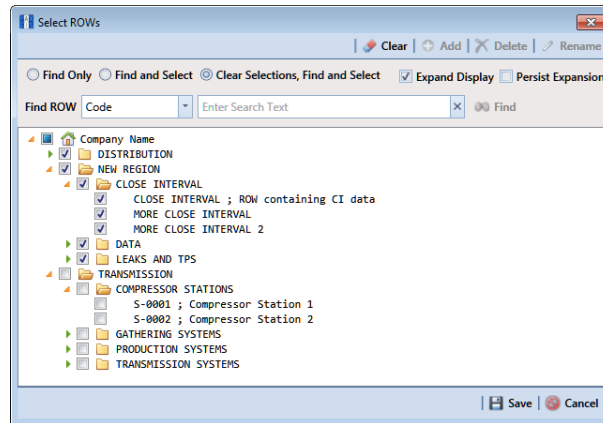
Figure 7-142. Select ROWs

2   Open the *Edit CPDM Data* window. Click **Data Entry** > **Edit CPDM Data**.

3   Open the *Rectifier Information* grid. Click the **Information** tab [Information] and then the **Rectifier** button [Rectifier].

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5   Select a row of records in the *Rectifier Information* grid with the rectifier you want to link to a pipeline segment. For example, the record for pipeline segment *T-1403* is selected in the following figure (Figure 7-143).
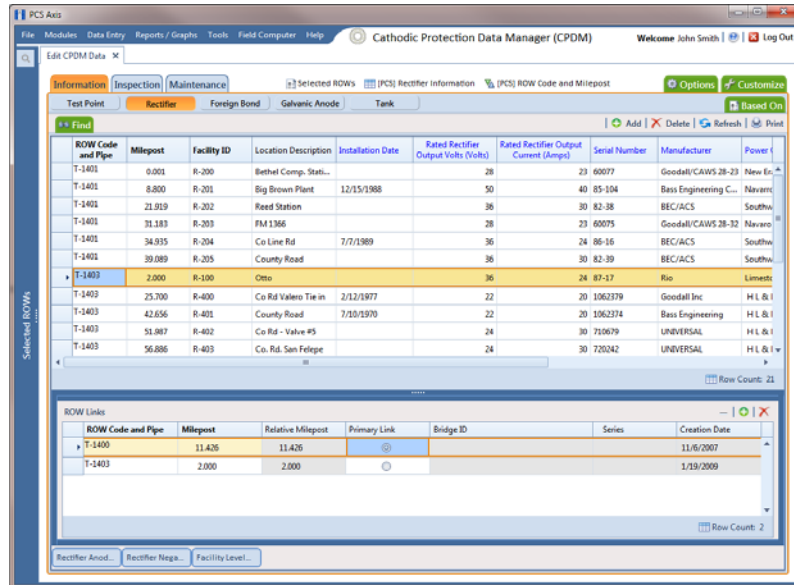
Figure 7-143. ROW Links

6   Click the minimize button ➖ in the upper right-hand corner of the *Facility Level Override* mini-grid to hide the mini-grid. Then double-click the **ROW Links** button ⬚ ROW Links to open the *ROW Links* mini-grid.

7   Click ➕ **Add** in the *ROW Links* mini-grid to open the *Add Row Link* dialog box (Figure 7-144).
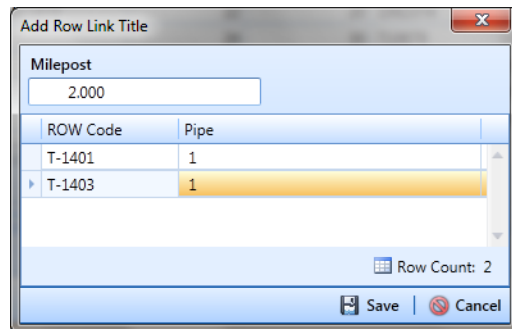

Figure 7-144. Add Row Link

8 Identify the milepost number of the pipeline segment you want to link. Type the milepost number in the **Milepost** field, then select the pipeline segment. Click **Save** to save changes and close the dialog box.

After clicking **Save** the following operations occur:

- PCS Axis adds a new ROW link for the selected milepost and pipeline segment in the *ROW Links* mini-grid.

  If this is the first link in the mini-grid, it automatically becomes the *Primary Link*. PCS Axis copies rectifier information from the *Primary Link* to subsequent links added later in the mini-grid. You can however set any link in the mini-grid as the *Primary Link* by clicking the option button. Only one link can be set as the *Primary Link*.

- PCS Axis adds a new record for the selected milepost and pipeline segment in the *Rectifier Information* grid.

  The new record includes rectifier information copied from the record selected as the *Primary Link* in the *ROW Links* mini-grid.

9 Provide a date in the **Creation Date** field to identify when you linked the rectifier to the pipeline segment. Select the **Creation Date** field and then click the down-arrow to select a date using a calendar.

Working with Rectifier Anodes

PCS Axis provides two mini-grids for working with rectifier impressed anodes. Use the *Rectifier Anode Information* mini-grid to provide anode information, such as the shunt rating or shunt resistance for each anode in the ground bed of a rectifier. PCS Axis uses this information to automatically calculate the anode shunt factor.

Use the *Rectifier Anode Inspection* mini-grid to enter inspection readings for each anode in the ground bed of a rectifier, such as a current or shunt reading for each impressed anode in the ground bed.

Tracking rectifier impressed anodes in PCS Axis allows you to monitor the capacity of the anode ground bed for a rectifier that produces current. You can track the current flow for each anode to determine which anodes have low or no current output.

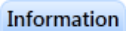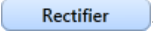Topics in this section include those in the following list:

Adding Rectifier Anode Information

To add a record in the *Rectifier Anode Information* mini-grid for each anode in the ground bed, follow these steps:

1 Click the **Select ROWs** button 🔍 to open the *Select ROWs* window (Figure 7-145). Select the pipeline segment(s) with the rectifier you want to work with, then click 💾 **Save** to close the window.
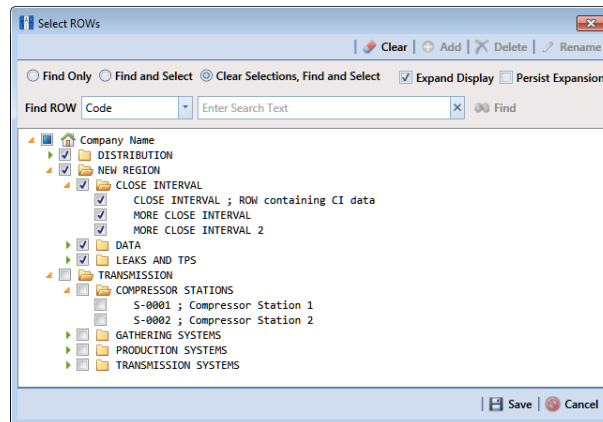
Figure 7-145. Select ROWs

2 Open the *Edit CPDM Data* window. Click **Data Entry** > **Edit CPDM Data**.

3 Open the *Rectifier Information* grid. Click the **Information** tab `Information` and then the **Rectifier** button `Rectifier`.

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Select a row of records in the *Rectifier Information* grid with the rectifier you want to add impressed anode records. For example, the record for pipeline segment T-1401 with rectifier R-202 is selected in the next figure (Figure 7-146, page 369).
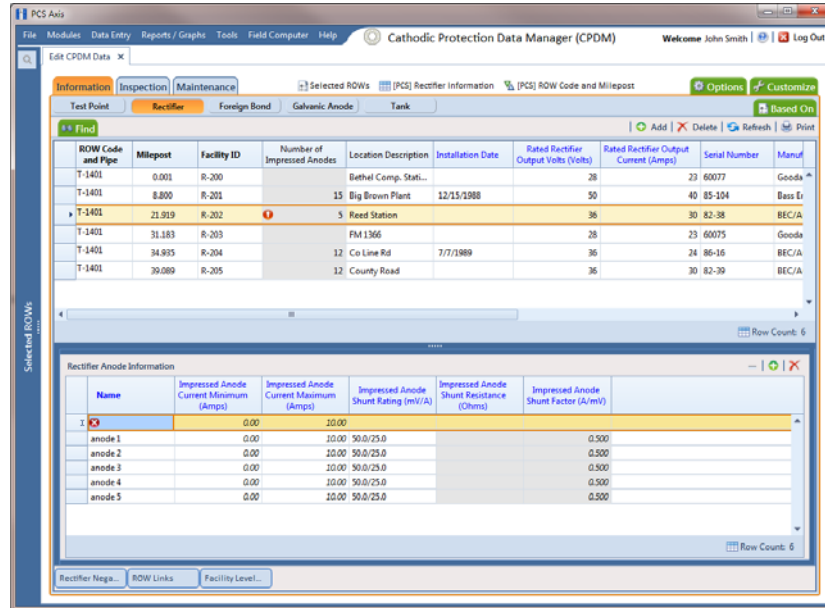

Figure 7-146. Rectifier Anode Information

6 If the *Rectifier Anode Information* mini-grid is not visible, double-click the **Rectifier Anode...** button | Rectifier Anode... | at the bottom of the window to open the mini-grid. Click the minimize button — in the upper right-hand corner of any other mini-grid to hide them (Figure 7-147).
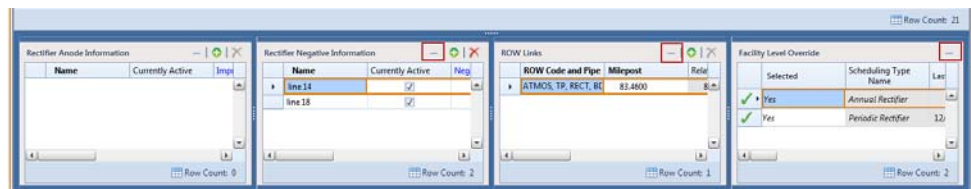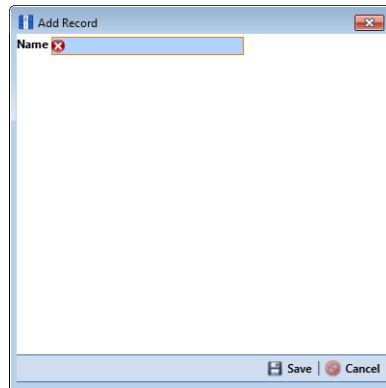

Figure 7-147. Rectifier Information Mini-grids

7 Click ⊕ **Add** in the *Rectifier Anode Information* mini-grid to add an empty record in the mini-grid.

8 In the pop-up *Add Record* dialog box (Figure 7-148), type a name for the anode in the **Name** field. Fields requiring information include a ⊗ icon. You must enter information in the required fields before the record will be added.

Figure 7-148. Add Record Dialog Box

9 Click 💾 **Save** to add the record and close the window.

10 Enter a value in either the field labeled **Impressed Anode Shunt Rating** or **Impressed Anode Shunt Resistance**.

> **NOTE:** If entering a shunt rating, enter it as a mV per A ratio using the format nn.n/nn.n, such as 50.0/25.0 for the shunt rating 50 mV/25 A. If entering a shunt resistance value, enter the actual resistance of the shunt in ohms. When both of these fields are empty, you can enter a value in the field *Impressed Anode Shunt Factor* instead. Otherwise, PCS Axis automatically calculates the shunt factor based on the value in the shunt rating or shunt reading field.

11 Repeat **step 6** through **step 10** to add each remaining anode in the ground bed.

12 Click 🔄 **Refresh** to update 🔴 derived fields, such as *Number of Impressed Anodes*. For more information about derived fields, refer to *Working with Derived Fields* (page 226).

> **NOTE:** PCS Axis displays the total number of anodes in the system calculated field labeled *Number of Impressed Anodes* in the *Rectifier Information* and *Inspection* grid. This value is based on the total number of anodes in the *Rectifier Anode Information* mini-grid. If the field is not present in your grid, refer to *Adding a Data Grid Layout Theme* (page 317) to add the field.
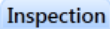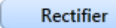
Adding Rectifier Anode Inspections

If rectifier anode records have not yet been added in the *Rectifier Anode Information* mini-grid, complete the procedure in the previous section first (*Adding Rectifier Anode Information* (page 368)) and then continue with the procedure in this section.

To enter anode inspection readings in the *Rectifier Anode Inspection* mini-grid, follow these steps:

1   Click the **Select ROWs** button to open the *Select ROWs* window (Figure 7-149). Select the pipeline segment(s) with the rectifier you want to work with, then click **Save** to close the window.
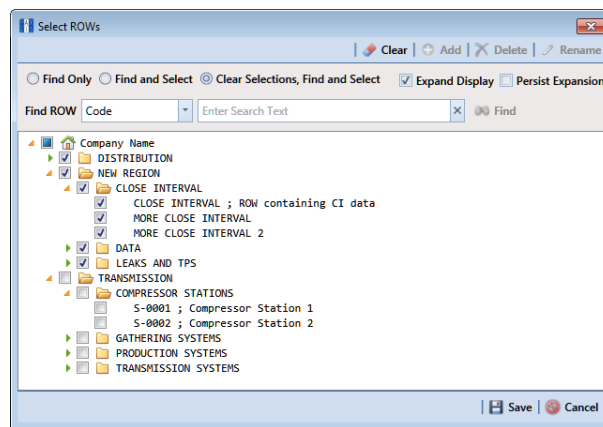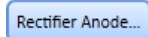
Figure 7-149. Select ROWs

2   Open the *Edit CPDM Data* window. Click **Data Entry** > **Edit CPDM Data**.

3   Open the *Rectifier Inspection* grid. Click the **Inspection** tab `Inspection` and then the **Rectifier** button `Rectifier`.

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

**5** Select a row of records in the *Rectifier Inspection* grid with the rectifier and anodes you want to add anode inspection readings. For example, the record for pipeline segment T-1401 with rectifier R-202 is selected in Figure 7-150.
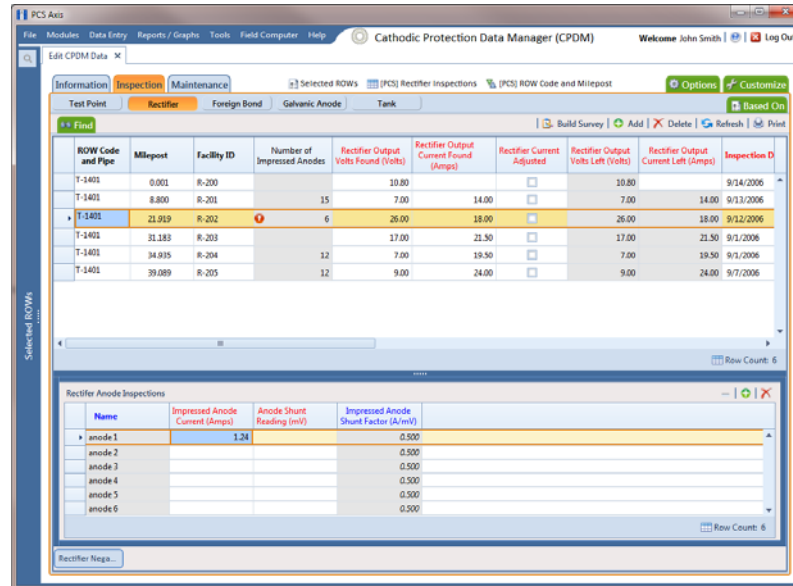
Figure 7-150. Rectifier Anode Inspections

6 If the *Rectifier Anode Inspections* mini-grid is not visible, double-click the **Rectifier Anode...** button ⟦Rectifier Anode...⟧ at the bottom of the window to open the mini-grid. Click the minimize button ▬ of all other mini-grids to hide them.

7 Select an anode record in the mini-grid and then click ⊕ **Add**.

8 Type an inspection reading in either the **Impressed Anode Current** or **Anode Shunt Reading** field.

9 Click 🔄 **Refresh** to update ❶ derived fields, such as *Number of Impressed Anodes*.

___

NOTE: For more information about ❶ derived fields, refer to *Working with Derived Fields* (page 226).

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10 Repeat **step 7** through **step 9** to enter inspection readings for remaining anodes.

Working with Rectifier Negatives

A rectifier can typically have from one to five negative wires that protect different pipelines. Tracking rectifier negatives in PCS Axis allows you to easily identify which rectifier negative wire is connected to which pipeline. You can also monitor the current flow for each rectifier negative in an effort to determine how much of the total current is used to protect each pipeline.

PCS Axis provides two mini-grids for working with rectifier negatives. Use the *Rectifier Negative Information* mini-grid to provide negative information, such as the shunt rating or shunt resistance for each negative wire of the rectifier. PCS Axis uses this information to automatically calculate the negative shunt factor.

Use the *Rectifier Negative Inspections* mini-grid to enter inspection readings for each negative wire of the rectifier, such as a current or shunt reading for each negative wire.

Topics in this section include those in the following list:

- *Adding Rectifier Negative Information* (page 373)

- *Adding Rectifier Negative Inspections* (page 376)

Adding Rectifier Negative Information

To add a record in the *Rectifier Negative Information* mini-grid for each negative wire of a rectifier providing current to a pipeline(s), follow these steps:

1   Click the **Select ROWs** button 🔍 to open the *Select ROWs* window (Figure 7-151). Select the pipeline segment(s) with the rectifier you want to work with, then click 💾 **Save** to close the window.
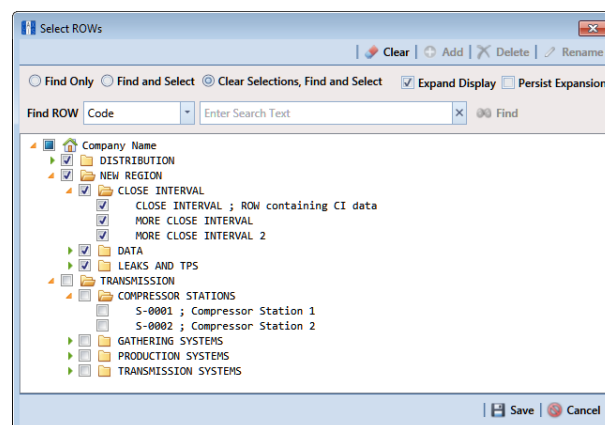

Figure 7-151. Select ROWs

2   Open the *Edit CPDM Data* window. Click **Data Entry** > **Edit CPDM Data**.

3 Open the *Rectifier Information* grid. Click the **Information** tab `Information` and then the **Rectifier** button `Rectifier`.

4 If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Select a row of records in the *Rectifier Information* grid with the rectifier you want to add negative records. For example, the record for pipeline segment T-1401 with rectifier R-202 is selected in the following figure (Figure 7-152).
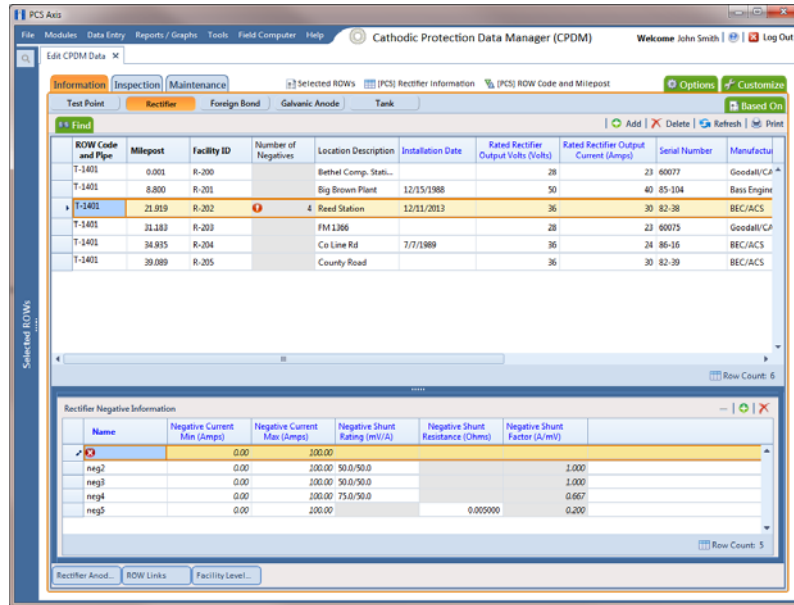
Figure 7-152. Rectifier Negative Information

6 If the *Rectifier Negative Information* mini-grid is not visible, double-click the **Rectifier Negati...** button `Rectifier Negati...` at the bottom of the window to open the mini-grid. Click the minimize button — in the upper right-hand corner of all other mini-grid to hide them.

7 Click ⊕ **Add** in the *Rectifier Negative Information* mini-grid to add an empty record in the mini-grid.

8 In the *Add Record* dialog box (Figure 7-153) type a name for the record. Fields requiring information include a ⊗ icon. You must enter information in the required fields before the record will be added.
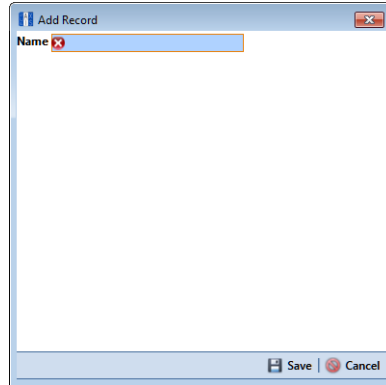
Figure 7-153. Add Record Dialog Box

9 Click ![save icon] **Save** to add the record and close the window.

10 If the rectifier rating is different than the minimum and maximum values provided by PCS Axis in the fields **Negative Current Min** and **Negative Current Max**, type the rectifier rating in these fields.

11 Type a value in either the field labeled **Negative Shunt Rating** or **Negative Shunt Resistance**.

NOTE: If entering a shunt rating, enter it as a mV per A ratio using the format nn.n/ nn.n, such as 50.0/25.0 for the shunt rating 50 mV/25 A. If entering a shunt resistance value, enter the actual resistance of the shunt in ohms. When both of these fields are empty, you can enter a value in the field *Negative Shunt Factor* instead. Otherwise, PCS Axis automatically calculates the shunt factor based on the value in the shunt rating or shunt reading field.

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12 Click ![refresh icon] **Refresh** to update ![derived icon] derived fields, such as *Number of Negatives* shown in Figure 7-152, page 374.

NOTE: For more information about ![derived icon] derived fields, refer to *Working with Derived Fields* (page 226).

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13 Repeat **step 7** through **step 12** to add a record for each remaining negative wire.

> **NOTE:** PCS Axis displays the total number of negatives in the system calculated field labeled *Number of Negatives* in the *Rectifier Information* and *Inspection* grid. If the field is not present in your grid, refer to *Adding a Data Grid Layout Theme* (page 317) to add the field.

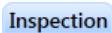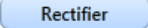## Adding Rectifier Negative Inspections

If rectifier negative records have not yet been added in the *Rectifier Negative Information* mini-grid, complete the procedure in the previous section first (*Adding Rectifier Negative Information* (page 373)) and then continue with the procedure in this section.

To enter negative inspection readings in the *Rectifier Negative Inspection* mini-grid, follow these steps:

1   Click the **Select ROWs** button 🔍 to open the *Select ROWs* window (Figure 7-154). Select the pipeline segment(s) with the rectifier you want to work with, then click 💾 **Save** to close the window.
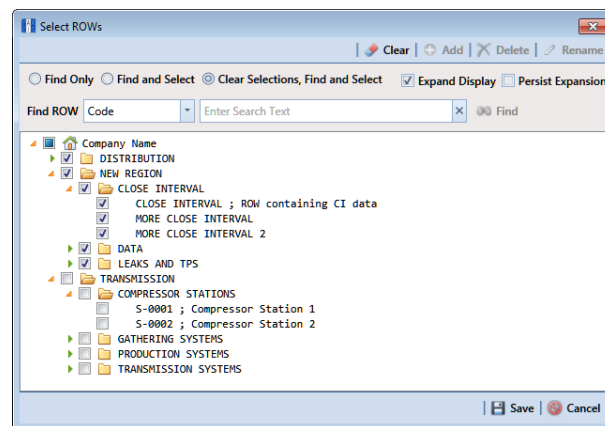

Figure 7-154. Select ROWs

2   Open the *Edit CPDM Data* window. Click **Data Entry** > **Edit CPDM Data**.

3   Open the *Rectifier Inspection* grid. Click the **Inspection** tab `Inspection` and then the **Rectifier** button `Rectifier`.

4   If you want to collapse the *Selected ROWs* panel to view more of the grid, click the **Selected ROWs** bar. Clicking the bar again expands the panel.

5 Select a row of records in the *Rectifier Inspection* grid with the rectifier and negatives you want to add negative inspection readings. For example, the record for pipeline segment T-1401 with rectifier R-201 is selected in the following figure (Figure 7-155).
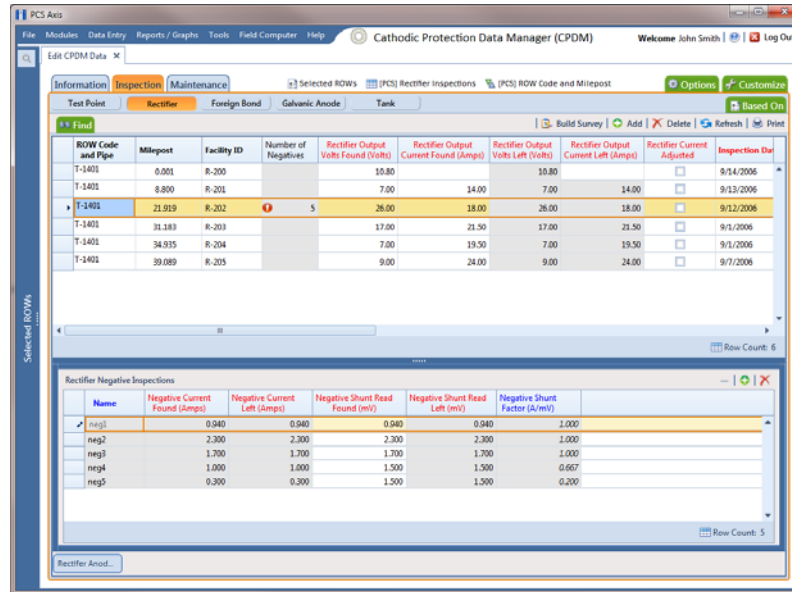
Figure 7-155. Rectifier Negative Inspections

6 If the *Rectifier Negative Inspections* mini-grid is not visible, double-click the **Rectifier Negati...** button | Rectifier Negati... | at the bottom of the window to open the mini-grid. Click the minimize button ▬ of all other mini-grids to hide them.

7 Select a row of records in the *Rectifier Negative Inspections* mini-grid and then click ➕ **Add**.

8 If the rectifier output current has been adjusted and the check box *Rectifier Current Adjusted* is enabled in the *Inspection* grid, complete the following steps: in the *Rectifier Negative Inspections* mini-grid:

   a Type the amperage reading taken before rectifier adjustments in the field **Negative Current Found**.

   b Type the amperage reading taken after rectifier adjustments in the field **Negative Current Left**.

9 Type an inspection reading in either the field **Negative Shunt Read Found** or **Negative Shunt Read Left**.

10 Click ⟳ **Refresh** to update 🔴 derived fields, such as *Number of Negatives* shown in Figure 7-155 on page 377.

NOTE: For more information about 🔴 derived fields, refer to *Working with Derived Fields* (page 226).

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11 Repeat **step 7** through **step 10** to enter readings for another negative.