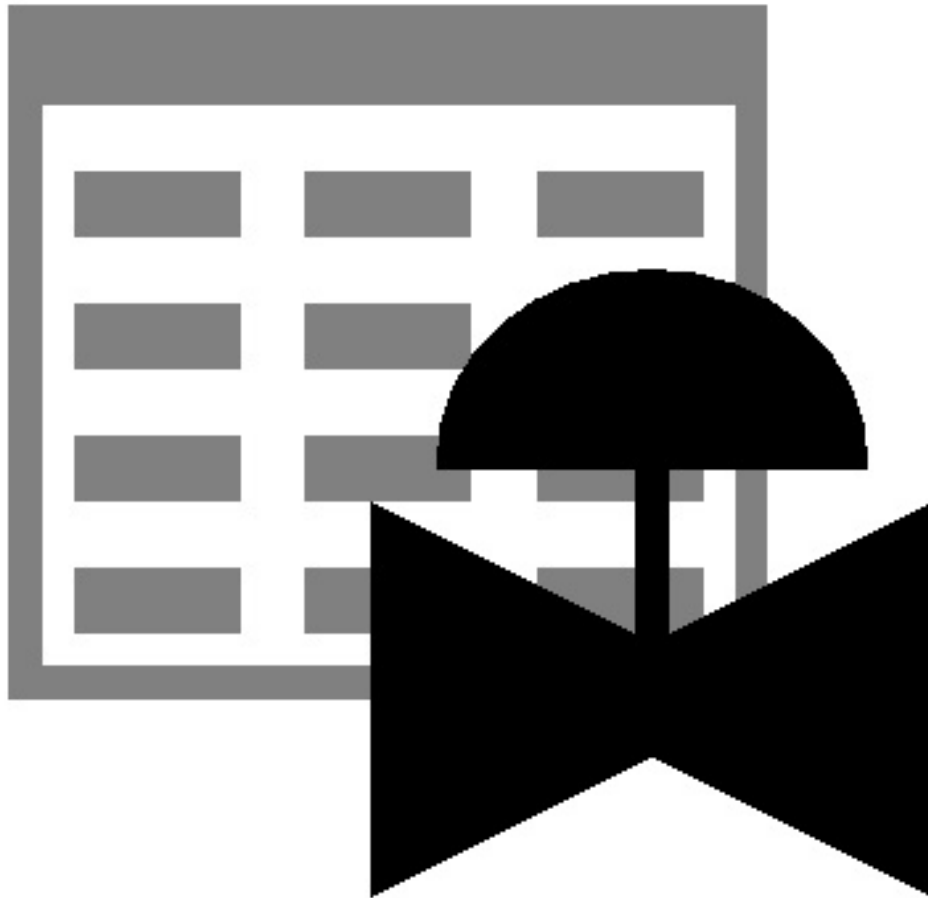


# StationManager™ 2.1

## *User's Manual*



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**Revision 002**

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## User Limit

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The number of Users that can simultaneously run the StationManager software depends on the number of User licenses purchased with the subscription. This number is referred to as the User Limit.

When StationManager is executed, it determines the User Limit associated with the subscription and the number of Users currently using the software - the Current Users. The Welcome screen displays these values.

If adding a new User does not exceed the User Limit, the *Continue* command button will be enabled, and you can start StationManager. If the User Limit is exceeded by allowing a new User, you will not be able to execute the StationManager software until one of the in-use licenses is returned.

## About The User’s Manual

---

This User’s Manual attempts to provide the User with an understanding of the StationManager software by providing extensive descriptions and documentation of its various features. The main body of the User’s Manual presents descriptions of the various menu items and data screens. Separate sections are provided for several of the more extensive features. The *Appendix* section presents technical documentation of the database and the various equations and data files used and supported by StationManager.

*Italics* are used extensively throughout the User’s Manual. Italicized words are used in two manners - one to emphasize a word or, more commonly, to indicate the name of a menu item, command button, or keyboard key.

Additional information and documentation may be found on our website, [www.b3pelle.com](http://www.b3pelle.com).



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# GENERAL INFORMATION







## Introduction

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StationManager is designed to be easy and intuitive to use. However, there are a few general concepts that need to be learned before becoming proficient with the software. There are two ways to get started with StationManager.

First, this section in the User's Manual provides an introduction to many of the basic concepts required to use StationManager. Review this section to obtain general information needed to use the software.

The other method is to work the example contained in the Demonstration Guide. The guide will introduce the basic concepts to create, populate, access, analyze, review, and print a simple example database. If time is short, we suggest you start with the Demonstration Guide and then review the contents of the User's Manual when more time is available.

## System/Hardware Requirements

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StationManager will operate on any device configured to run Windows 8 through Windows 11. The StationManager software will require a minimum of 26 MB of free hard disk space when installed. Each station will require approximately 19 KB of free hard disk space.

## License Management System

---

StationManager uses an internet-based licensing system. The software can be installed on any number of devices. License information is stored on a B3PE server. When a User attempts to use the software, the license availability is checked on the server. If the number of "in-use" licenses is less than the purchased number of licenses (the User Limit), the User is allowed to continue; otherwise, the use of the software is denied until the number of "in-use" licenses is below the User Limit.

A license can be "checked out" for up to thirty (30) days. Once "checked out," the license is unavailable for use by any other Users until the license is checked back "in." An internet connection is not required to use the software during the checkout period for the device and User who checked out the license.

## Database Design

---

The StationManager software provides the User with a comprehensive predefined database for maintaining design, operation, inspection, and compliance data associated with pressure-reducing stations. Data is accessed through an easy-to-use spreadsheet-style interface. The spreadsheet interface is enhanced by several complementary interface options.

- A Data Entry Form allows “fill-in-the-blank” access and entry.
- An Audit Report allows view-only access to station and compliance data and results.
- A powerful Schematic Data Interface allows graphical viewing of data values and results and point-and-click access to the station data.

Integral to the database is a full calculation engine for performing capacity and pressure calculations to ensure regulatory and operational compliance.

The StationManager database consists of files containing various values associated with different aspects of the station data. These include a file containing general database setup and default information, a file containing general station information, a file containing the data required for the hydraulic analysis, a file containing inspection results, and a file containing specific equipment information for the pressure regulating and relief devices. The Station Data file contains a record for each station. Each station record is linked to the remaining data files so that all data can be accessed based on the selected station record.

StationManager defines a station as a collection of runs, stages, devices, and piping sections. A run consists of one or more stages. A stage consists of one or more devices and the associated piping sections. A device is a pressure limiting or overpressure device - regulator or relief valve. Devices are designated upstream (regulator) or downstream (regulator or relief valve). The piping sections are defined as upstream (supply or inlet), intermediate (between the upstream and downstream device), downstream (outlet of station), and stack (outlet of relief valve).

A station can contain one or two runs. A run can contain one or two stages. A stage can contain one or two devices. Stages can be configured as regulator only, regulator-regulator, regulator-relief valve, dual regulator-relief valve, or relief valve only. Operation schemes for regulator-regulator configurations can be upstream monitoring - downstream controlling, upstream working monitor - downstream controlling, or upstream controlling - downstream monitoring.

When two stages are present, the downstream section of the first (upstream) stage is disabled, and the upstream piping of the second (downstream) stage is assumed to be connected directly to the outlet of the first-stage downstream device.

If a stage consists of a regulator only, the downstream device is disabled. The regulator must be assigned as the upstream device. The intermediate piping is disabled, and the downstream piping is assumed to be connected directly to the outlet of the upstream device (regulator).

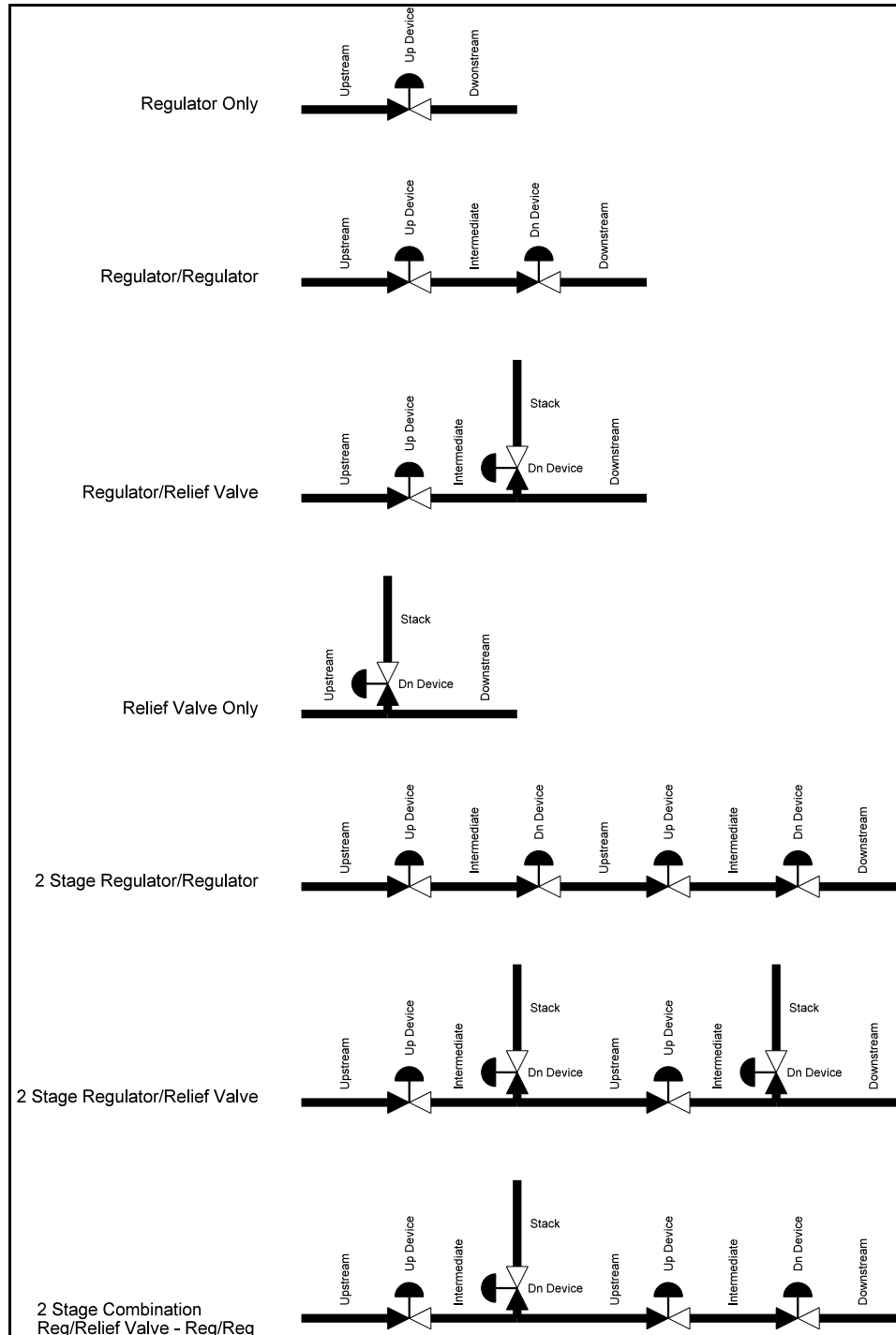
If a stage consists of a relief valve only, the upstream device is disabled. The relief valve must be assigned as the downstream device. The intermediate piping is disabled, and the upstream piping is assumed to be connected directly to the inlet of the downstream device (relief valve).



In addition to the station data, a set of data files called “Property Tables” are also maintained. These files contain common information about pipe, fitting, regulator, and relief valve properties. The common data contains values such as inside pipe diameter, equivalent lengths for fittings, and valve factors for the regulator and relief valves. The Property Tables can be customized by the User to reflect their needs.

Some of the supported station configurations are shown in the following figure.





In addition to the configurations shown, relief valves can be “shared” between a parallel run and stage or “combined” on stages in series. Sharing a relief valve refers to the case where regulators in a parallel run and stage are protected by a single relief valve, assumed to be installed on one run or the other. Combining a relief valve refers to the case where an upstream regulator is protected by two (different) downstream relief valves - the capacity of the relief valves is combined during the compliance check. The combined relief valves are assumed to be installed in series on the same run.

The device control lines are assumed to be connected as follows:

<b>Control Line Sense Location</b>		
<b>Configuration</b>	<b>Device</b>	<b>Sense Location</b>
Regulator Only	Upstream (Control)	Inlet of Downstream Piping
Monitor - Upstream	Upstream (Monitor)	Inlet of Downstream Piping
	Downstream (Control)	Inlet of Downstream Piping
Monitor - Downstream	Upstream (Control)	Inlet of Downstream Piping
	Downstream (Monitor)	Inlet of Downstream Piping
Monitor - Upstream Working	Upstream (Control)	Inlet of Intermediate Piping
	Upstream (Monitor)	Inlet of Downstream Piping
	Downstream (Control)	Inlet of Downstream Piping
Regulator/Relief Valve	Upstream (Regulator)	Inlet of Intermediate Piping
	Downstream (Relief Valve)	Outlet of Intermediate Piping
Relief Valve Only	Downstream (Relief Valve)	Outlet of Upstream Piping

## Sample Database

A sample database is included when StationManager is installed. The database contains sample records for each type of station configuration supported by StationManager. The database will be automatically opened when StationManager is first executed. To open the database at other times, use the *Open* item from the *File* menu. Instructions for browsing and manipulating the database contents are provided in the *Example* section of this Demonstration Guide. If changes are made to the sample database, the original contents can be restored using the *Restore Samples* item from the *File* menu.



### Database Interface

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The values contained in the database are accessed through a spreadsheet-style report. The data is grouped by functionality into separate report sections, which are displayed on separate report tabs. The report consists of tabs, rows, and columns. Each row represents a record, and each column represents a specific data item. Each station is represented by a record and sub-records for each run and stage.

Several options are available for viewing and entering data values and results. The primary means of access is through the Station Data Report. This access option allows direct access to the data values and results and provides a variety of data manipulation tools. The Report interface is complimented by several additional specialized interfaces. The Data Form allows data to be entered using a fill-in-the-blank style interface, and the results are presented in a similar style. The Audit Form allows view-only access to station and compliance data. The Schematic Data Interface provides graphical access to the data values and results and allows point-and-click data editing and graphical display of the calculation results.

The Station Data Report is the only access option that allows station records to be inserted or deleted. Records can be added to the end of the database with any edit-enabled interfaces. The report must be open to access the station data or other data access interfaces. Tools are provided to create a selection and sorted sets, limit the data displayed, to add, enter, insert, and move records, update values en masse based on User-defined selection criteria, and save a selected set of data.

### Notes On Dimensional Units

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When StationManager first starts, its default dimensional units are set to standard US values (feet, inches, psi, Fahrenheit). However, you will notice that the software supports a variety of dimensional units.

As used in StationManager, unless otherwise specified, all pressure units represent “gauge” units. Within the documentation, gauge pressure units are generally shown without a suffix, and absolute pressure units are shown with an “a” or “(Abs)” suffix. Gas volume values or volumetric flow rates are expressed in “standard” cubic units based on (adjusted to) the specified base pressure and temperature.

### Notes For International Users

---

StationManager attempts to accommodate the needs of international Users by providing a robust set of dimensional units. These units can be selected as appropriate for the User’s particular needs.



StationManager does have a particular weakness when it comes to the various Property Tables that contain predefined data. These lists are primarily oriented toward US manufacturers and sizes. The Property Tables can be easily modified by the User to more specifically meet the particular needs of each User. The Property Tables provided with the software are intended to provide a starting point to allow the User to create their custom Property Tables.

## Using The Help System

---

The help documents are stored on the B3PE server. You must be connected to the internet to access the various StationManager help and support documents.

The StationManager Manual can be used for information on specific screens and commands and detailed instructions, descriptions, and explanations.

Once a document is opened, it can be saved locally. If you save a help document to your machine for offline access, open it directly in your Portable Document Format (PDF) document viewer. A suitable PDF document viewer or reader is required to view and print the documents.

## The Help Menu

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Access to the various help documents and information is provided in the *Help* menu. You can also view our contact information, send a help request, or visit our website. *Note* - Some of the features require an internet connection to work properly.

## Contact Us

---

**Hours** - Our normal work hours are 8:00 A.M. to 5:00 P.M. Mountain Time, Monday through Friday. However, if you have a problem, please try anytime - we may be in.

**By Telephone** - (719) 578-9391

**By Email** - [help@b3pe.com](mailto:help@b3pe.com)

**By Website** - [www.b3pellc.com](http://www.b3pellc.com)







# MENU ITEMS





### General Information

---

This section provides a general reference for using the StationManager menu bar and the associated menu items. Grouped by functional topic, procedures are described for using each of the menu items available in the StationManager menu bar. Most of the menu items will launch a data or specifications screen. Further information describing the use and features of the screens is provided in later sections of this Manual.

Certain menu items are not enabled unless a database is open.

### File - File Management

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The StationManager database file management routines are grouped in the *File* menu. The routines located in this menu are used to manage the database files only. That is, these routines manipulate the files directly associated with a database. The contents and use of each of the StationManager files are described in the *Appendix* section.

Access to the StationManager support files, such as the Property Tables, is handled by the individual routines that access or manipulate those specific files. Management routines such as copying and deleting the support files must be performed manually by the User.

A StationManager database consists of several files, each possessing the same name but varying extensions. Some of the files represent the general station, inspection, equipment, and default data associated with each database, while other files represent support or other data files. A full list of the specific file extensions is contained in the *Appendix* section. StationManager manages the database files based on the name of the general station data file, which ends in a “.sdb” extension. When prompting for a database name, StationManager expects the “.sdb” extension to be present. Include the “.sdb” extension when manually entering a database name.

Only one database may be open at a time. The name of the currently open database is displayed at the top of the main StationManager screen. Certain menu items and commands will prompt for a filename if a function that affects a database file is executed and a database has not already been opened. Once a database has been opened, execution of subsequent database-related routines will apply to the open database.

The routines found in the *File* menu are described in the following sections.



---

### New - *Create A New Database*

---

The New routine creates a new set of database files. To create a new StationManager database...

- From the *File* menu, select the *New* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. Click the *Continue* command button.
- The Station Data Report will automatically be displayed.

#### *Notes & Considerations*

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- If the name of an existing database is selected or entered, a message will be displayed. To overwrite the existing database files, click the *Yes* command button. To return to the File Selection screen without overwriting the existing database files, click the *No* command button. If you choose to overwrite the database files, the contents of the original files will be sent to the Windows Recycle Bin.
- If the path name is omitted when entering a new name, the current drive and directory (folder) will be assigned as the path. If the extension is omitted, the “.sdb” extension will automatically be applied.
- When executed, StationManager will create and open a new set of database files.
- As new records are added, the values initially populating the data items from new records are extracted from the default values. The default values and dimensional units may be set using the Default Data Values routine found in the *Utilities* menu.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.

---

### Open - *Open An Existing Database*

---

The Open routine opens an existing database for editing and reporting. To open an existing database...

- From the *File* menu, select the *Open* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. If the file cannot be found, a message will be displayed. When a valid filename has been entered, click the *Continue* command button.
- The Station Data Report will automatically be displayed.

### Notes & Considerations

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- If a database is already open, a message may be displayed asking whether to save the changes. Click the *Yes* command button to save changes to the open database, close the database, and open the selected database. Or, click the *No* command button to close the open database without saving changes and open the selected database. Or, click the *Cancel* command button to return to the currently open database.
- When a valid database name has been entered, StationManager will create a temporary copy of the selected database. Once the temporary database has been created, the various edit, report, and calculation routines can be used to manipulate the database. Changes are saved to the temporary database and are not made to the actual database file until the database is “saved.” Choose the desired function to proceed.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.

## Open New Window

---

The Open New Window routine opens an existing database for editing and reporting. To open an existing database...

- From the *File* menu, select the *Open New Window* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. If the file cannot be found, a message will be displayed. When a valid filename has been entered, click the *Continue* command button.
- The Station Data Report will automatically be displayed.

### Notes & Considerations

---

- If a database is already open, a message may be displayed asking whether to save the changes. Click the *Yes* command button to save changes to the open database, close the database, and open the selected database. Or, click the *No* command button to close the open database without saving changes and open the selected database. Or, click the *Cancel* command button to return to the currently open database.
- When a valid database name has been entered, StationManager will create a temporary copy of the selected database. Once the temporary database has been created, the various edit, report, and calculation routines can be used to manipulate the database. Changes are saved to the temporary database and are not made to the actual database file until the database is “saved.” Choose the desired function to proceed.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.



---

### ***Close - Close The Currently Open Database***

---

The Close routine “closes” the currently open database. To close the current database...

- From the *File* menu, select the *Close* item.

#### ***Notes & Considerations***

---

- If changes have been made to the open database, a message will be displayed asking whether to save the changes - respond appropriately.
- Each time StationManager is started, it will automatically open the last open database file. This feature may be disabled by closing the database before exiting StationManager.

---

### ***Save - Save Database Changes***

---

The Save routine saves the changes made to the currently open database. To save changes...

- From the *File* menu, select the *Save* item.

#### ***Notes & Considerations***

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- Each time the database is saved, a backup copy of the previous files are saved. If an existing set of backup files already exist, they are moved to the Windows Recycle Bin.

---

### ***Save As - Save Database To Another Name***

---

The Save As routine saves the changes of the current database to another (different) database filename and changes the name of the currently open database to the specified name. To save the current database changes to another name...

- From the *File* menu, select the *Save As* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. Click the *Continue* command button.
- The currently open database will now be displayed with the new database name.

### Notes & Considerations

---

- If the name of an existing database is selected or entered, a message will be displayed. To overwrite the existing database files, click the *Yes* command button. To return to the File Selection screen without overwriting the existing database files, click the *No* command button. If you choose to overwrite the database files, the contents of the original files will be sent to the Windows Recycle Bin.
- When a valid database name has been selected or entered, StationManager will copy the contents of the currently open database into the database files associated with the new name.
- The Save As routine saves (copies) the contents of the data stored in memory, not the data stored in the file on disk. To copy the data stored on the disk to another destination, use the Copy routine.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.

## Rename - Change The Name Of The Currently Open Database

---

The Rename routine changes the name of the currently open database to another User-specified name. The names of the various files associated with the database will be changed to the specified name. Unsaved changes to the current database will not be saved. To change the name of the current database...

- From the *File* menu, select the *Rename* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. Click the *Continue* command button.
- A message will be displayed when the Rename routine is complete. Click the *OK* command button to clear the message.

### Notes & Considerations

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- If the name of an existing database is selected or entered, a message will be displayed. To overwrite the existing database files, click the *Yes* command button. To return to the File Selection screen without overwriting the existing database files, click the *No* command button. If you choose to overwrite the database files, the contents of the original files will be sent to the Windows Recycle Bin.
- When a valid database name has been entered or selected, StationManager will change the name of the current database files to the User-specified name.

- The Rename routine changes the name of the data files stored on the disk to a new User-specified name; it does not save the data stored in memory. To save the data stored in memory to another destination, use the Save As routine. The Rename routine does not make a copy of the disk files; it only changes the name of the files. Use the Copy routine to make a copy of the disk files.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.

## Copy - Copy The Database Files

StationManager provides a routine for copying the files associated with a database. The Copy routine will automatically copy the various database files to a User-specified destination and database name. To copy the files associated with the currently open database...

- From the *File* menu, select the *Copy* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. Click the *Continue* command button.
- A message will be displayed when the copy has been completed. Either click the *Yes* command button to open the new file or click the *No* command button to clear the message.

### Notes & Considerations

- If the name of an existing database is selected or entered, a message will be displayed. To overwrite the existing database files, click the *Yes* command button. To return to the File Selection screen without overwriting the existing database files, click the *No* command button. If you choose to overwrite the database files, the contents of the original files will be sent to the Windows Recycle Bin.
- When a valid database name has been entered or selected, StationManager will copy the current database's files into the destination (target) database files.
- The Copy routine copies the contents of the data stored in the disk file, not the data stored in memory. To save the data stored in memory to another destination, use the Save As routine.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.



### Copy With New Inspection Year

---

StationManager provides a routine to copy the files associated with a database and change the inspection year. When using this routine, StationManager will automatically copy the various database files to a specified destination database name and allow a new inspection year to be specified. To copy and change the inspection year for the files and records associated with the currently open database...

- From the *File* menu, select the *Copy With New Inspection Year* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. Click the *Continue* command button.
- The Copy With New Inspection Year screen is displayed. In the *New Year Value* data field, enter the desired inspection year value, then click the *Continue* command button.
- Several messages will be displayed - respond appropriately.
- Upon completion of the copy routine, StationManager will prompt whether to open the new database. Either click the *Yes* command button to open the new database or click the *No* command button to leave the current database open.

#### Notes & Considerations

---

- If the name of an existing database is selected or entered, a message will be displayed. To overwrite the existing database files, click the *Yes* command button. To return to the File Selection screen without overwriting the existing database files, click the *No* command button. If you choose to overwrite the database files, the contents of the original files will be sent to the Windows Recycle Bin.
- When a valid database name has been selected, StationManager will copy the current database's files into the destination (target) database files.
- The Copy With New Inspection Year routine copies the contents of the data stored in the disk file, not the data stored in the temporary database. To save the data stored in the temporary database to another destination, use the Save As routine.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.

### Delete - *Delete The Database Files*

---

The Delete routine deletes all files associated with a User selected database, including the backup files. To delete an existing database's files...

- From the *File* menu, select the *Delete* item.
- The File Selection screen is displayed. In the *Filename* data field, select or enter the name of the database to be deleted. A message will be displayed if the file is not found. Once a valid name has been entered or selected, click the *Continue* command.
- A message will be displayed asking to confirm the database's deletion. Either click the *Yes* command button to delete the selected database or click the *No* command button to cancel the routine.

#### *Notes & Considerations*

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- If the database you are attempting to delete is open, an error message will be displayed. Click the *OK* command button, then close the database and re-execute the Delete routine.
- After the selected database has been deleted, the File Selection screen will be redisplayed - either select another database for deletion or click the *Cancel* command button to end the routine.
- When a valid database name has been selected, StationManager will "delete" the contents of each file associated with the selected database. The files are not actually deleted but sent to the Windows Recycle Bin. The files may be manually restored using Windows File Explorer.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.

### Append - *Append The Database Files*

---

The Append routine provides a means for appending (joining) two databases together. The database files of the selected database are added to the currently open database. The database to be appended must be open before attempting to execute the Append routine. To append another database to the currently open database...

- From the *File* menu, select the *Append* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. A message will be displayed if a valid file is not found. When a valid database name has been entered, click the *Continue* command button.



- A message will be displayed asking to confirm the appending of the two databases. Either click the *Yes* command button to append the selected databases or click the *No* command button to cancel the routine.
- Additional messages may be displayed - respond appropriately.
- A message will be displayed when the Append routine is complete. Click the *OK* command button to clear the message. *Note* - If the routine failed or the result was unexpected, close the model without saving the changes.

### Notes & Considerations

- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.

## Merge - Update & Combine Databases

StationManager provides a routine for merging (combining) two databases together. The routine searches for matching stations; if a match is found, the data in the open database is updated with the data from the merging database; if a match is not found, a new station is added to the open database. To merge a database with the currently open database...

- From the *File* menu, select the *Merge* item.
- The File Selection screen is displayed. In the *Filename* data field, either select or enter the database name to merge with the currently open database. A message will be displayed if the file is not found. When a valid database name has been entered, click the *Continue* command button.
- A message will be displayed asking to confirm the merging of the databases. Either click the *Yes* command button to continue merging the selected databases or click the *No* command button to cancel the routine.
- The Merge Specifications screen is displayed. In the *Match By* data list, select the items you wish to use to check for matching stations. Either click the *Continue* command button to continue merging the selected databases or click the *Cancel* command button to cancel the routine.
- A message will be displayed when the Merge routine is complete. Click the *OK* command button to clear the message.

### Notes & Considerations

- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.



- See the *Merge Specifications* topic in the *Data Screens* section for a detailed description of its features.

## **Bundle - *Bundle & Unbundle Database Files***

---

StationManager provides a set of routines for bundling (zipping) and unbundling (unzipping) a database's file set. These routines are described in the following sections.

### **Bundle A Database - *Zip A Database***

---

The Bundle routine bundles all of a database's files into a single "zip" format file. This is useful for archiving, backing up, or sharing databases with others. The database must be open before it can be bundled. To bundle the files associated with the currently open database...

- From the *Bundle* submenu of the *File* menu, select the *Bundle A Database* item.
- A message will be displayed asking whether to include assigned images in the bundled (zipped) file. Click the *Yes* command button to include any assigned images or click the *No* command button to create the zipped file without including the assigned images.
- If images are included in the bundled file, a message will be displayed asking to include the image pathname with the image names. Click the *Yes* command button to include the image pathname or click the *No* command button to create the zipped file without including the image pathname. Generally, the pathname should not be included.
- A message will be displayed indicating whether the bundle operation succeeded or failed. Click the *OK* command button to clear the message.

### **Notes & Considerations**

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- The file created by the Bundle routine will be created in the same folder as the original database file and will be named the same as the database, except that it will end with a ".zip" extension. The bundled (zipped) file's format is compatible with PKZip 2.04g. The file may be unbundled using the StationManager Unbundle routine, or it may be unzipped (extracted) using any compatible file compression program.

---

### Unbundle A Database - *Unzip A Database*

---

The Unbundle routine unbundles a set of files contained in a single “zip” format file. The zip file can be created either by the StationManager Bundle routine or by another zip or compression application. To unbundle a zip file of a database...

- From the *Bundle* submenu of the *File* menu, select the *Unbundle A Database* item.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field or select an existing name from the *Files* list. If the name is manually entered, include the “.zip” extension. A message will be displayed if a valid file is not found. When a valid database name has been entered, click the *Continue* command button.
- If one or more of the database files already exist, a message will be displayed asking whether to overwrite the existing database files. Either click the *Yes* command button to overwrite the file and continue, click the *No* command button to not overwrite the files and continue, or click the *Cancel* command button to cancel the routine.
- A message will be displayed indicating whether the unbundle operation succeeded or failed. Click the *OK* command button to clear the message.

#### Notes & Considerations

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- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.

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### Paths (File Locations) - *Set The Default File Locations*

---

The *Paths (File Locations)* item allows the User to specify the default location of the various database files, initialization files, the Property Tables, license file, and image files. These locations are used when a new database is created or when a Property Table or file is needed. The default location is the directory (folder) that StationManager uses first when dealing with the various file operations. In most cases, the User may specify other locations when saving or retrieving a file. To specify the preferred locations...

- From the *File* menu, select the *Paths (File Locations)* item.
- The Path Settings screen is displayed. Select the desired data tab, then select the appropriate Drive and Directory of the preferred location. The last open folder in the *Directories* list indicates the selected path location. Click the *Close* command button to save changes.

#### Notes & Considerations

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- See the *Path Settings* topic in the *Data Screens* section for a detailed description of its features.



### Property Tables - *Set The Default Property Tables*

---

The *Property Tables* item allows the User to specify which Property Tables (contained in the current Property Table path) to use with the current database. To specify the desired Property Tables...

- From the *File* menu, select the *Property Tables* item.
- The Property Table Selection screen is displayed. To change the Property Table path, click the *Change Path Setting* command button. Select the desired location, then select the desired Property Table names. Click the *Close* command button to save changes.

#### *Notes & Considerations*

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- See the *Property Table Selection* topic in the *Data Screens* section for a detailed description of its features.

### Preferences

---

StationManager allows the User to specify certain User interface behaviors. The available settings are described in the following sections.

#### Set Image Editor

---

When selected, the Image Editor Specifications screen is displayed. To change the name and path of the image editor used by StationManager, type the appropriate path and name in the *Program Path & Name* data field and click the *Close* command button. To close the screen without changing the path and name, click the *Cancel* command button. If no path and name are entered, the default Windows viewer/editor will be used.

#### *Notes & Considerations*

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- See the *Image Editor Specifications* topic in the *Data Screens* section for a detailed description of its features.

#### Set Preferences

---

The *Set Preferences* item allows the User to specify several settings that affect various behaviors of the StationManager User interface. To change the preferences...

- From the *Preferences* submenu of the *File* menu, select the *Set Preferences* item.



- The Preference Settings screen is displayed. Select the desired options. Click the *Close* command button to save changes.

### Notes & Considerations

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- See the *Preference Settings* topic in the *Data Screens* section for a detailed description of its features.

## Set Calculation Options

---

When selected, the Calculation Options screen is displayed. Either enter or select the desired calculation options. Click the *Close* command button to close the screen and save changes.

### Notes & Considerations

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- See the *Calculation Options* topic in the *Data Screens* section for a detailed description of its features.

## Restore Previous Database - *Restore Database Files*

---

The *Restore Previous Database* item provides a routine for restoring the backup copies of a database's data files. StationManager automatically creates a backup copy of the various database files each time the Save routine is used. To restore the backup version of the currently open database...

- From the *File* menu, select the *Restore Previous Database* item.
- A message will be displayed asking whether to proceed with the restoration. Either click the *Yes* command button to proceed or click the *No* command button to cancel the routine.
- A message will be displayed once the restoration is complete. Click the *OK* command button to clear the message.

## Restore Samples - *Restore The Sample Databases*

---

When StationManager is installed, several sample (example) files and databases are copied to the destination disk. As the various examples are worked, these files will change. To restore the original (unchanged) example database files...

- From the *File* menu, select the *Restore Samples* item.



- A message will be displayed when the sample databases have been restored. Click the *OK* command button to clear the message.

## Release Read-Only - *Remove Read-Only Flag*

---

When a StationManager database is opened, a “flag” is set so other Users may not save changes to the opened database. If StationManager is closed unusually (crash or power is lost while running), or the database is not closed properly, the Read-Only Flag may not be removed. The *Release Read-Only* menu item may be used to remove the Read-Only Flag so that the database can be edited and saved. To remove the read-only flag...

- From the *File* menu, select the *Release Read-Only* item.
- A message will be displayed asking whether to release the Read-Only Flag to allow others to overwrite any changes. Click the *Yes* command button to proceed or click the *No* command button to cancel the routine. If the *Yes* command button is clicked, a message will be displayed when the Read-Only Flag has been released. Click the *OK* command button to clear the message.

## Exit StationManager - *Closing StationManager*

---

When the *Continue* command button is clicked on the StationManager Welcome screen to enter the software, a license of the StationManager software will be “checked-out.”

When exiting the StationManager software, there are two options - to “return” the checked out license or to keep the license “checked out.”

- To return the “checked out” license, from the *Exit StationManager* menu, click the *And Return License* item. In order to return the “checked out” license, the device must be connected to the internet so that the User Limit can be updated.
- To keep the license “checked out,” from the *Exit StationManager* menu, click the *Without Returning License* item. The User Limit will not be updated, and the license will remain “checked out” until the license is “returned.” This option allows for the software to be used without having access to an internet connection for up to 30 days. Select the *And Return License* item from the *Exit GASWorkS* menu to return a “checked out” license.

## Notes & Considerations

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- If a database is open when StationManager is closed, that database will automatically be reopened the next time StationManager is started.





### **Edit - Enter & Edit Data**

---

Most database data editing features are handled in the Station Data Report, Data Entry Form, or Schematic Data Interface routines. A few special Edit routines are handled outside of those functions. These routines are accessed through the *Edit* menu. The routines found in the *Edit* menu are described in the following sections.

### **Mass Update - Update The Database Data**

---

The Mass Update routine allows changes en masse to be made to a data value based on a User-specified criteria. For example, the Mass Update routine could be used to set the *Flowing Temperature* value to 50°F for all stations with an elevation of 5000 feet or greater. To make a mass data change...

- From the *Edit* menu, select the *Mass Update* item.
- The Mass Update Specifications screen is displayed. Either enter or select the desired values as appropriate. Click the *Update* command button to perform the update.

#### **Notes & Considerations**

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- If an erroneous mass update is performed, immediately click the *Restore* command button to restore the original data values.
- See the *Mass Update Specifications* topic in the *Data Screens* section for a detailed description of its features.

### **Undo Change - Restore Changes Made Since The Last Mass Update**

---

To undo all of the data value changes made to the database since the last mass update was made, select the *Undo Change* item from the *Edit* menu. A message will be displayed - respond appropriately.

#### **Notes & Considerations**

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- This command is intended to undo data value changes made by the Mass Update routine. This command will undo all of the data value changes from all of the sources made since the last mass update was performed. To minimize unintentionally undoing any non-Mass Update routine changes, this command should be used as soon as possible after an unintentional Mass Update has been performed.

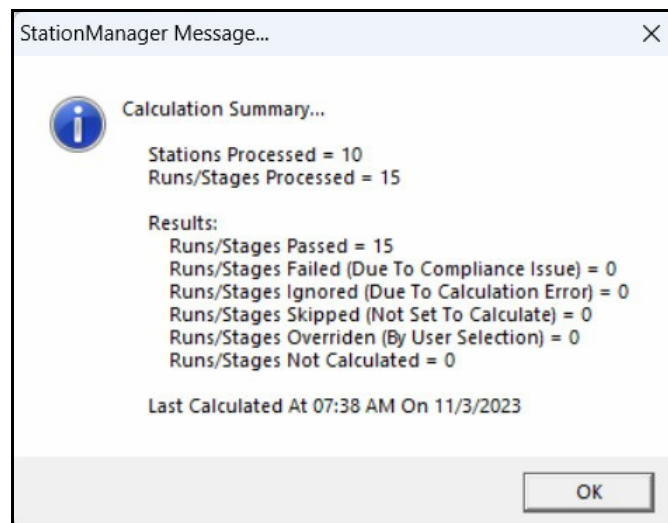


### Analysis - Calculating Values

The StationManager Calculation routines are grouped under the *Analysis* menu. The routines found in the *Analysis* menu are described in the following section.

### Calculate Station Values - Calculation Summary

The *Calculate Station Values* item recalculates station pressure and flow values under normal and failed conditions and performs a compliance check. The Calculation Summary is displayed with summary information, including the number of stations, runs and stages processed, and the number of stations passing or failing. Click the *OK* command button to clear the message.



### Report - View & Print Data

---

The StationManager Report routines are grouped in the *Report* menu. The routines located in this menu are used to view and print the data contained in the database and support files. The routines found in the *Report* menu are described in the following sections.

### Station Data - View & Edit Station Data

---

The Station Data Report creates a spreadsheet-style report in which the various functional data groups are accessed by tabbed sections. Selected data values may be edited. Portions of the report format may be configured by the User. To open the Station Data Report...

- From the *Report* menu, select the *Station Data* item.
- If a database has not been previously opened, the File Selection screen is displayed. If the screen is displayed, enter the name of an existing database. When a valid name has been entered, the Station Data Report is displayed.
- Browse through the report and various data tabs. Edit data value as desired.
- To close the Station Data Report, click the *Close* command button.

#### Notes & Considerations

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- See the *Station Data Report* topic in the *Data Screens* section for a detailed description of its features.

### Property Tables - View/Edit The Property Table Report

---

StationManager uses several Property Tables to maintain common information associated with the various hydraulic feature types. An extensive set of “standard” Property Tables are supplied by StationManager. To view or edit the standard Property Tables...

- From the *Report* menu, select the *Property Tables* item.
- The Property Table Report is displayed. Select the desired data tab (Property Table). View or edit the desired data values by clicking on the associated data cells. Click the appropriate icon to add, delete, or insert a record into the Property Table. Click the *Close* command button.
- If changes have been made, a message will be displayed asking whether to save the changes - respond appropriately.



### Notes & Considerations

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- See the *Property Table Report* topic in the *Property Tables* section for a detailed description of its features.

## Calculation Summary - *Process Statistics*

---

StationManager provides a routine for reporting the calculation statistics. The *Calculation Summary* item displays the Calculation Summary Report listing the number of stations processed, the number of runs and stages processed, failed condition results, and normal condition results. Click the *Close* command button to close the report.

## Database Summary - *Summarize The Database Contents*

---

StationManager provides a routine for summarizing the contents of the database. For example, listing the various regulators contained in the database and how many times they are assigned to a run. The *Database Summary* item displays the Database Summary Report Options screen. The routine may display any or all of the following summaries - Configuration, Downstream Device, Fitting, Pipe, or Upstream Device. Select the desired options. The Database Summary Report will list the routine results. The report lists the Size/Type Code of the various items in the database and the total quantity assigned. Click the *Close* command button to close the report.

### Notes & Considerations

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- See the *Database Summary Report* topic in the *Data Screens* section for a detailed description of its features.
- See the *Database Summary Report Options* topic in the *Data Screens* section for a detailed description of its features.

## Set Report Options - *Set The Report Format Options*

---

StationManager allows the User to specify various report format options, including the number of decimal places that are used when displaying the data and analysis results, coordinate data, and the default data entry screen. These settings are referred to as the Report Options. To set the Report Options...

- From the *Report* menu, select the *Report Options* item.
- The Report Options screen is displayed. Enter or select the desired settings. Click the *Close* command button to save changes and close the screen.



### Notes & Considerations

---

- See the *Report Options* topic in the *Data Screens* section for a detailed description of its features.



### Utilities - Use The Utility Routines

---

StationManager provides routines for performing various database support functions. These features are referred to as the Utility routines. They include routines for setting default values and performing various Import and Export routines. The Utility routines are grouped in the *Utilities* menu. These routines are described in the following sections.

### Set Default Values - Specify The Default Data Values

---

The initial data and unit values used to populate the various data fields are referred to as the “default data.” The Set Default Values routine allows the User to set the values for certain data items, which are automatically populated when new station records are imported to create a new database or added to an existing database. To specify the default data values...

- From the *Utilities* menu, select the *Set Default Values* item.
- The Default Data Values screen is displayed. Select the desired data tab, and enter or select the appropriate default data or options. Click the *Close* command button to close the screen and save changes.

#### Notes & Considerations

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- The Set Default Values routine is commonly used to set default data values and dimensional units before entering data. The default data values will be used when a new feature is added. However, the routine can also change the data values for existing features by clicking the appropriate “*Apply...Only*” command button. Be careful using the various “*Apply*” command buttons when features already exist in the model - all associated values will be changed to the specified default data values.
- See the *Default Data Values* topic in the *Data Screens* section for a detailed description of its features.

### Import/Merge - Import & Merge Data

---

StationManager provides various Import and Merge routines for exchanging data with other applications through a variety of file formats. These routines are controlled through the Import/Merge screen. To import or merge database data...

- From the *Utilities* menu, select the *Import/Merge* item.
- The Import/Merge screen is displayed. Select the desired file format from the *File Type* list, then click the appropriate command button.

- The File Selection screen is displayed. Select the desired target and source files, then select the *Continue* button.
- Depending on the specified *File Type*, additional data screens may be displayed to define the Import or Merge Specifications further - respond appropriately.
- The *Import/Merge Log* on the Import/Merge screen will display the status of the Import/Merge routine. When finished, click the *Close* command button to exit the screen.

### Notes & Considerations

- The Import routine creates a new database file from the source file.
- The Merge routine adds, combines, or updates data from a source file to a target file.
- When a valid database name has been entered, a new database will be created to input the data.
- If the name of an existing database is selected or entered, a message will be displayed. To overwrite the existing database files, click the *Yes* command button. To return to the File Selection screen without overwriting the existing database files, click the *No* command button. If you choose to overwrite the database files, the contents of the original files will be sent to the Windows Recycle Bin.
- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.
- See the *Import/Merge* topic in the *Import & Merge Routines* section for a detailed description of its features.

## Import GasValve File - Import A GasValve File

StationManager provides a specific routine for importing GasValve files. To import a GasValve file...

- From the *Utilities* menu, select the *Import GasValve File* item.
- The File Selection screen is displayed. Select the desired source location and target name, then click the *Continue* command button.
- After the translation is complete, click the *Close* command button.

### Notes & Considerations

- See the *File Selection* topic in the *Data Screens* section for a detailed description of its features.



- See the *Import A GasValve Database* topic in the *Import Routines* section for a detailed description of its features.

## Export - *Export Data*

---

StationManager provides various Export routines for sharing its data with other applications through a variety of file formats. These routines are controlled through the Export screen. To export data from the currently open database...

- From the *Utilities* menu, select the *Export* item.
- The Export screen is displayed. Select the desired file format from the *File Type* list, then click the *Export* command button.
- The File Selection screen is displayed. Enter the desired name in the *Filename* data field, then click the *Continue* command button.
- Depending on the specified *File Type*, additional data screens may be displayed to further define the Export Specifications - respond appropriately.
- The *Export Log* on the Export screen will display the status of the Export routine. When finished, click the *Close* command button to exit the screen.

### *Notes & Considerations*

---

- The database from which the data is exported must be open before selecting the routine.
- The Export routine creates a selected format target file from a database file.
- See the *Export* topic in the *Export Routines* section for a detailed description of its features.



---

### Window - *Window (Screen) Access Utilities*

---

Several utilities are provided to arrange and access open windows (screens). These routines are grouped in the *Window* menu. These routines are described in the following sections.

---

### Arrange Screens - *Arrange The Open Screens*

---

When several screens are open and overlapping, it is sometimes helpful to have the screens automatically arranged for easier viewing. Select the *Arrange Screens* item from the *Window* menu to arrange any open screens automatically. The screens will be placed in a stacked arrangement.

---

### Windows List - *Access The Open Screens*

---

A list of open screens is displayed in the *Window* menu. When several screens are open and overlapping, it is sometimes difficult to access a specific screen. A screen may be easily and quickly accessed by selecting its name from the Window List. When a screen name is selected, it is moved to the top (or in front) of the other screens.

### Help - *View The Help Resources*

---

Access to various information and documents is provided in the *Help* menu. These routines are described in the following sections.

An internet connection is required to display and view the various StationManager help and support documents. Once a document is opened, it can be saved locally. If the document is saved locally, we suggest storing the documents in the “\app\docs” subfolder of the root (main) StatMan program folder.

### View Getting Started Guide

---

StationManager provides a Getting Started Guide to help with the installation and execution of the software. To view the Getting Started Guide while connected to the internet, click the *View Getting Started Guide* item from the *Help* menu.

### View Demonstration Guide

---

The information contained in the Demonstration Guide is intended to provide an overview of the StationManager software. To view the Demonstration Guide while connected to the internet, click the *View Demonstrated Guide* item from the *Help* menu.

### View User's Manual

---

The User's Manual attempts to provide the User with an understanding of the StationManager software by providing extensive descriptions and documentation of its various features. The main body of the User's Manual presents descriptions of the various menu items and data screens. To view the User's Manual while connected to the internet, click the *View User's Manual* item from the *Help* menu.

### View Calculation References

---

The equations used by StationManager are similar to the equations and methods used by our GASCalc software. To avoid duplicating the equation documentation, the GASCalc Calculation References for the applicable calculations can be viewed using the items in the *View Calculation References* submenu.



---

## Technical Support - *How To Contact Us*

---

Several support options are contained in the *Technical Support* submenu. These items are described in the following sections.

### Contact Information

---

To view our contact information, select the *Contact Information* item from the *Technical Support* submenu of the *Help* menu. Our Contact Information is displayed. Click the *OK* command button to close the screen.

### Send Help Request

---

To send a help request to us, select the *Send Help Request* item from the *Technical Support* submenu of the *Help* menu. An email will be generated and displayed. Describe the nature of your problem or issue in an email. After completing the problem description, “send” the email. We will reply to the help request at our earliest convenience.

### Visit Website

---

Our website contains links to software updates, additional documentation, and general information about our products and services. To visit our website directly, select the *Visit Website* item from the *Technical Support* submenu of the *Help* menu. An internet connection is required for the link to work.

## Terms Of Use

---

Select the *Terms Of Use* item to display the Terms Of Use document for the current StationManager software installation.

## About StationManager - *Software Information*

---

Select the *About StationManager* item to display the version and setup information about the current StationManager software installation. The StationManager Information screen is displayed. Once reviewed, click the *OK* command button to close the screen.





# DATA SCREENS

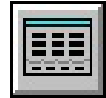




The previous section described the function of the StationManager menu items. In that section, numerous data and specification screens were introduced. This section provides a detailed description of many of those screens. Separate sections are also provided for the more extensive routines and functional groups. The descriptions are listed in alphabetical order based on the screen name.

## Audit Report

The Audit Report displays a summary of the station data and results. The Audit Report is accessed by clicking the *Display Audit Report* icon from the Station Data Report. The features associated with the report are described as follows.



Station Record: 1 - Sample, Anytown, CO, Sample 1

**Location Information...**  
District Identification: Sample  
City/Town, State: Anytown, CO  
Station Identification: Sample 1  
Area/Description: PRV To Somewhere  
Location: Anywhere  
Notes: Regulator/Relief Valve

**Inspection Results...**  
FY: 2005  
Previous Date: 07/05/2004  
Required Date: 10/04/2005  
Inspection Date:  
Inspected By: Joe Inspector  
Findings: 4 Items Failed Inspection. Required Action Not Completed.  
**Past Due By 6604 Days**

**Configuration/Equipment Information...**  
Run/Stage Configuration: Working - 1st Cut, Regulator - Relief Valve  

**Upstream Device...**  
Manufacturer: Fisher Controls  
Model: 299  
Body Size: 1-1/2 Inches  
Orifice Size: 1/2 Inches  
Normal/Failed Coefficient: 200 / 203  
Set Point: 30.00 Psi  
Nominal Inlet P Min/Max: 50.00 / 100.00 Psi  
Calculated Inlet P Norm/Fail: 49.98 / 99.93 Psi

**Downstream Device...**  
Manufacturer: Fisher Controls  
Model: 1808  
Body Size: 2 Inches  
Orifice Size:  
Normal/Failed Inlet P: 30.00 / 40.00 Psi  
Set Point: 40.00 Psi  
Coefficient: 1410

**Calculation Results...**  
**Pressures...**  

	MAOP:	Max Allowable:	Max Calculated:
Up:	100.00	100.00	100.00 Psi
Int:	100.00	110.00	40.10 Psi
Dn:	66.00	72.60	40.00 Psi

**Capacities...**  

	Required:	Normal:	Failed:
Up:	10.000	15.158	29.978 Mcfh
Dn:	29.978		157.522 Mcfh

Calculation Reviewed By:
**Station Passed, Stage Passed**

Run 1 - Stage 1

< First
<< Previous Station
< Mid >|
Next Station >>
Last >|

Print
Close

### Displayed Items

---

#### *Calculation Results -*

**Calculation Review By** - Displays the name of the person who reviewed the calculation.

**Review Date** - Displays the date when the calculation was reviewed.

#### **Capacities -**

**Failed** - Displays the failed capacity of the associated device.

**Normal** - Displays the normal capacity of the associated device.

**Required** - Displays the required capacity of the associated device.

#### **Pressures -**

**MAOP** - Displays the Maximum Allowable Operating Pressure of the associated piping section.

**Maximum Allowable** - Displays the maximum code-allowed pressure under failed conditions of the associated piping section.

**Maximum Calculated** - Displays the maximum calculated pressure under failed conditions of the associated piping section.

#### *Configuration/Equipment Information -*

**Run/Stage Configuration** - Displays the station's run and stage configuration.

#### **Downstream Device -**

**Body Size** - Displays the body size associated with the selected Size/Type Code.

**Coefficient** - Displays the sizing/rating factor for the associated device.

**Manufacturer** - Displays the manufacturer's name associated with the selected Size/Type Code.

**Model** - Displays the model name or number associated with the selected Size/Type Code.

**Normal/Failed Inlet Pressure** - Displays the inlet/upstream pressure to the device under normal and failed conditions.





**Orifice Size** - Displays the orifice size associated with the selected Size/Type Code.

**Set Point** - Displays the set/control point for the associated device.

### **Upstream Device -**

**Body Size** - Displays the body size associated with the selected Size/Type Code.

**Calculated Inlet Pressure Normal/Failed** - Displays the calculated inlet/upstream pressure to the device under normal and failed conditions.

**Manufacturer** - Displays the manufacturer's name associated with the selected Size/Type Code.

**Model** - Displays the model name or number associated with the selected Size/Type Code.

**Nominal Inlet P Minimum/Maximum** - Displays the "nominal" minimum and maximum inlet/upstream pressure to the device. Nominal pressure represents the supply/inlet pressure to the upstream piping.

**Normal/Failed Coefficient** - Displays the sizing/rating factor for the associated device for normal and failed conditions.

**Orifice Size** - Displays the orifice size associated with the selected Size/Type Code.

**Set Point** - Displays the set/control point for the associated device.

### **Location Information -**

**Area/Description** - Displays additional descriptive information about the station.

**City/Town, State** - Displays the city or town and state associated with the station location.

**District Identification** - Displays the pressure or operating district associated with the station.

**Location** - Displays the descriptive location of the station.

**Notes** - Displays comments and notes for the associated station.

**Station Identification** - Displays the station's identification assignment.

### **Inspection Results -**

**Findings** - Displays a summary of the field inspection results.



**FY** - Displays the calendar year for which the inspection/review applies.

**Inspected By** - Displays the name of the person who performed the field inspection.

**Inspection Date** - Displays the date when the field inspection was performed.

**Previous Date** - Displays the previous inspection/review date.

**Required Date** - Displays the date when the current inspection is due.

### Command Buttons

---

**Close** - Closes the report screen.

**First** - Displays the first station in the current report.

**Last** - Displays the last station in the current report.

**Middle** - Displays the station in the middle of the current report.

**Next Station** - Displays the next station in the current report.

**Previous Station** - Displays the previous station in the current report.

**Print** - When clicked, the Print Settings screen is displayed to print the contents of the currently displayed report.

### Notes & Considerations

---

- The Audit Report only allows the viewing and display of the data and results. The report cannot be used to revise or change data.
- The content of the screen will vary depending on the station configuration.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this screen.

### Calculation Options

StationManager allows the User to set various options and limits for the calculation and review of the station hydraulic values and results. These values are set using the Calculation Options screen. The Calculation Options screen is accessed by selecting the *Set Calculation Options* item from the *Preferences* submenu from the *File* menu. The features associated with the screen are described as follows.

### Data Items

**Atmospheric Calculation Method** - Specifies the method to calculate the atmospheric pressure values.

**Failure Style For Two Stage Set** - Specifies the failure mode for runs containing two pressure stages.

**Inspection Frequency** - Specifies which code/standard to use to establish the inspection frequency, or to enter it manually.

**Inspection Interval** - Either displays the inspection interval if a code/standard is selected for the Inspection Frequency, or allows entry of the Inspection Interval if “Manual Entry” is selected for the Inspection Frequency.

**Outlet To Set Pressure Ratio Limit** - Specifies the check value for the station outlet to the control device set pressure ratio.

**Regulatory Code/Specification** - Specifies the regulatory code or specification for the compliance check calculation.

**Velocity Limit - Failed Conditions** - Specifies the maximum velocity limit for failed condition checks.

**Velocity Limit - Normal Conditions** - Specifies the maximum velocity limit for normal condition checks.

### **Other Options -**

**Allow Empty Component Lists** - When selected, allows no components to be assigned to a piping section. If the option is not selected and one of the component lists is empty, an error message will occur during the calculation.

**Ignore Inlet/Relief Valve Or Security Valve Set Pressure Check** - When selected, indicates whether the relief valve set pressure is checked against the maximum station supply pressure during calculations.

**Ignore Relief Valve Build-Up Pressure Check** - When selected, the relief valve inlet (build-up) pressure may fail below the set pressure plus the minimum build-up pressure during the failed pressure calculations. If the option is not selected, the relief valve inlet pressure is maintained at or above the set pressure plus minimum build-up pressure. In either case, the set pressure plus minimum build-up pressure value is used during the MAOP comparison.

**Ignore Minimum Differential Pressure Check** - When selected, the minimum differential is set to zero (0) during the calculation. If the option is not selected and the minimum differential is not met during the calculation process, an error will be generated, and the station/run will be ignored.

**Ignore Reset Differential Handling** - When selected, the minimum reset differential is ignored when calculating the relief valve reset pressure.

**Limit Pipe Flow To Sonic Velocity** - When selected, the flow through all pipe sections is limited to a velocity less than or equal to sonic velocity. If the option is not selected, the flow velocity is unlimited.

**Limit Relief Inlet To No Less Than Reset Pressure** - When selected, the relief valve inlet pressure cannot fall below the associated reset pressure during the failed calculations.

**Limit Relief Stack Outlet To Atmospheric Pressure** - When selected, the pressure at the downstream (outlet) end of the relief vent stack cannot exceed atmospheric pressure during the failed calculations.

**Reset Review Date When Station Calculated** - When selected, the review date value will be set to the current date when the station record is calculated. If the option is not selected, the review date is unchanged when a calculation is performed.



**Use Downstream Allowable Buildup Pressure For Failed Regulator Capacity** - When selected, this option will cause the calculation to use the maximum allowable build-up pressure (MAOP + Allowable Build-Up) to be used as the outlet pressure of the regulator when calculating the failed regulator capacity. Otherwise, the MAOP value will be used in the calculation.

### Command Buttons

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

### Notes & Considerations

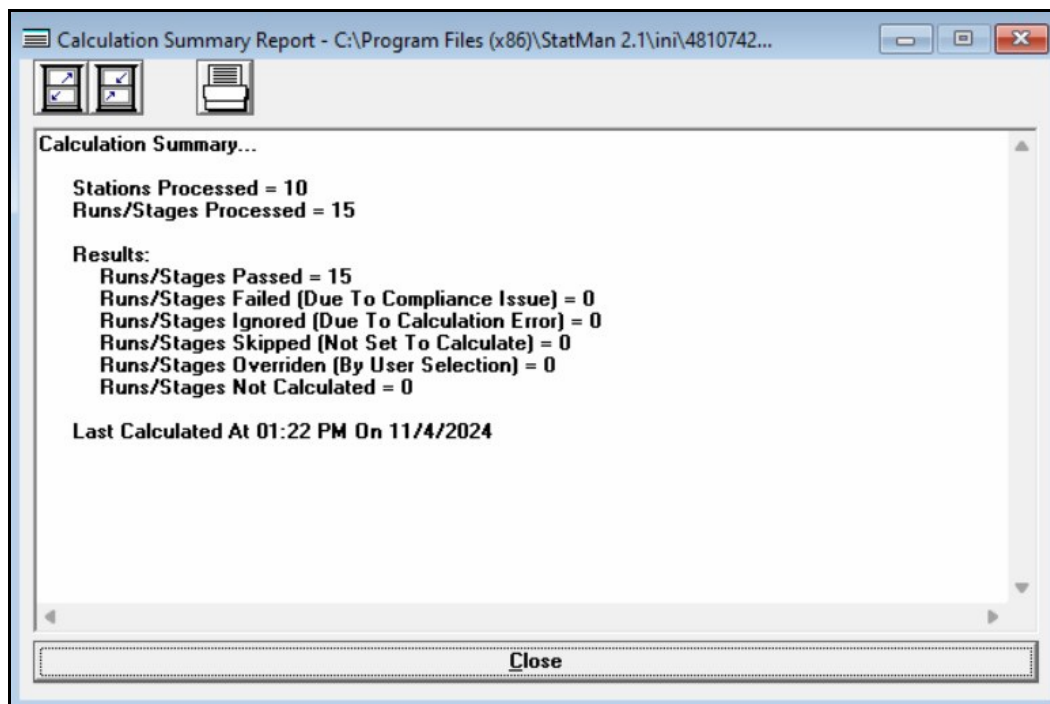
- When the *Limit Pipe Flow To Sonic Velocity* calculation option is selected, the pipe flow in the various sections of the station, including the stack piping, is limited to sonic velocity (choked flow). When the stack piping is limited, the capacity of the relief valve may also be limited. The relief valve cannot pass any more volume than the stack can pass. When this option is not selected, the flow velocity in the piping sections and the stack are allowed to be unlimited; this may yield unrealistic and overly optimistic capacity results for the relief valve.
- The Failure Style For Two Stage Set calculation options are used as follows:

<i>Failure Style</i>	<i>Use</i>
Single (Independent) Failure	Assumes only one device has failed when performing the second stage failed condition calculation. For example, if the station is configured with a monitor regulator in the first stage and a regulator and relief valve in the second stage, only the regulator in the second stage is assumed to have failed when computing the required capacity for the relief valve.
Double (Coincident) Failure	Assumes that multiple devices have failed when performing the second stage failed condition calculation. For example, if the station is configured with a monitor regulator in the first stage and a regulator and relief valve in the second stage, both the monitor and controlling regulator in the first stage and the regulator in the second stage are assumed to have all failed when computing required capacity for the relief valve.

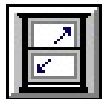
- Normally, an error is generated, and the station cannot be calculated if the relief valve set pressure value is higher than the maximum station supply pressure value - this may indicate that a data entry error has occurred. However, there may be cases where it is desirable to allow the relief valve set pressure to be greater than the supply pressure. In these cases, although the relief valve is present, it would never theoretically be activated. To allow these types of stations to be calculated, select the *Ignore Inlet/Relief Or Security Valve Set Pressure Check* calculation option.
- The Outlet To Set Pressure Ratio Limit checks for acceptable pressure drop across the downstream or take-away piping. Excess pressure drop across this portion of piping is often a cause of unsatisfactory downstream system pressures.
- The Velocity Limits are only used to check for excess pipe velocity values under the associated conditions. They do not limit or affect the flow capacity of the piping sections.
- When the *Limit Relief Stack Outlet To Atmospheric Pressure* calculation option is selected, the pressure at the downstream (outlet) end of the vent stack piping is limited to no more than atmospheric pressure. In cases where the flow velocity in the stack piping reaches sonic velocity (choked flow), using this option will underestimate the capacity of the stack and, thus, the relief valve, yield conservative results. When the option is not selected and choked flow is present, the stack outlet pressure can increase to more realistic values, yielding more realistic stack and relief valve capacity values.
- When the *Limit Relief Inlet To No Less Than Reset Pressure* calculation option is selected, the pressures downstream are maintained at or above the reset pressure of the relief valve. In cases where the relief valve will automatically reset itself, this option allows the pressures downstream of the regulator to be more accurately represented. When the option is not selected, the pressures downstream of the regulator can drop below the relief valve set pressure. In this case, the calculated pressure values represent the pressures that would be present if the relief valve remained open and no backflow was present from the downstream system.

### Calculation Summary Report

The Calculation Summary Report is accessed by selecting the *Calculation Summary* item from the *Report* menu. The screen lists the number of stations processed, the number of runs and stages processed, failed condition results, and normal condition results. The features associated with the screen are described as follows.



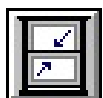
#### Icons



**Maximize Screen Size** - Increases the report's size to fill the StationManager display.



**Print** - Prints the contents of the report. When clicked, the Print Settings screen is displayed.



**Reset Screen Size** - Sets the report's size to its "normal" dimensions and position.



### **Command Buttons**

---

**Close** - Closes the report screen.

### **Notes & Considerations**

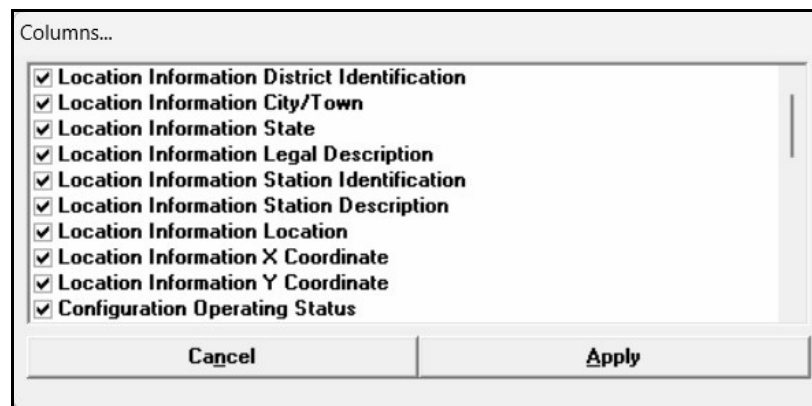
---

- The Calculation Summary Report is created when the database is “calculated.” If changes have been made to the database since it was last calculated, the values in the report may not be current. If the database has not been calculated, the report will be empty.



### Columns

The User may select the data items (columns) that are displayed in many of the various Reports. The Columns specification screen is used to make these selections. The Columns specification screen is accessed by clicking the *Set Columns* icon from the associated report screen. The features associated with the screen are described as follows.



### Data Items

**Columns** - When selected, the associated data item (column) will be displayed in the associated report. The contents of the *Columns* list will vary by report.

### Command Buttons

**Apply** - Closes the screen and applies the changes.

**Cancel** - Closes the screen without applying changes.

### Notes & Considerations

- The Set Columns routine may be used to adjust the report width when printing. Normally, the report will contain more information than will fit on a single page. Use the Columns specification screen to eliminate some of the undesired columns from the report by unselecting the unwanted data items (columns).

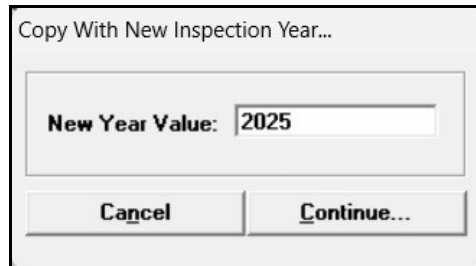
- To display a specific column, select the column name.
- To display all of the columns, click the *Restore Columns* icon.



### Copy With New Inspection Year

---

The Copy With New Inspection Year screen is accessed by selecting the *Copy With New Inspection Year* item from the *File* menu. The features associated with the screen are described as follows.



Copy With New Inspection Year...

New Year Value: 2025

Cancel Continue...

#### Data Items

---

**New Year Value** - Specifies the new inspection year. Enter a value using the following format - MM/DD/YYYY.

#### Command Buttons

---

**Cancel** - Closes the screen without copying the database with a new inspection year.

**Continue** - Proceeds with the routine.

### Data Entry Form

StationManager provides several User interface styles for accessing and entering data. The interface used by the Data Entry Form provides a “fill in the blank” style format. The form is accessed by clicking the *Display Data Entry Form* icon from the Station Data Report. Changes made using this form will be reflected in the Station Data Report. The features associated with the form are described as follows.



### General Tab - Location/Configuration Tab

Station Record: 1 - Sample, Anytown, CO, Sample 1

General Run 1 Stage 1 Compliance Inspection Images

Location Information...

District Identification: Sample

City/Town: Anytown State: CO

Legal Description: Sec Rng Twn

Station Identification: Sample 1

Area/Description: PRV To Somewhere

Location: Anywhere

X Coordinate: 22.3450 Y Coordinate: 44.5670 Degrees L/L

Configuration...

Operating Status: In Service

Number Of Runs: 1 Stages Per Run: 1

Capacity...

Minimum Required: 1.00 Mcfh

Maximum Required: 10.00 Mcfh

< Back Next >

Location/Configuration Gas Properties/Miscellaneous

< First << Previous Station < Mid > I Next Station >> Last > I

Cancel Print Calculate Close

### Data Items

**Area/Description** - Specifies additional descriptive information about the station.

**City/Town** - Specifies the city or town associated with the station location.

**District Identification** - Specifies the pressure district or operating district associated with the station.



**Legal Description** - Specifies the “legal” description of the station location - for example, Southwest 1/4 of Section 28.

**Location** - Specifies the descriptive location of the station. For example, the Northeast corner of 1<sup>st</sup> and Main Streets.

**Maximum Required** - Specifies the maximum required flow capacity of the station.

**Minimum Required** - Specifies the minimum required flow capacity of the station.

**Number Of Runs** - Specifies the number of runs for the station.

**Operating Status** - Specifies the station’s operating status.

**Stages Per Run** - Specifies the number of pressure cuts/stages for each run.

**State** - Specifies the state associated with the station location.

**Station Identification** - Specifies the station’s identification assignment - for example, TBS #1.

**X Coordinate/Y Coordinate** - Specifies the coordinates for the station’s location.

### Notes & Considerations

---

- Descriptive data items, such as *Area/Description* and *Location*, are not used in the hydraulic calculations. These items can be used to enter any alphanumeric data values.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### General Tab - Gas Properties/Miscellaneous Tab

General	Run 1 Stage 1	Compliance	Inspection	Images
<b>Gas Properties...</b> Elevation: <input type="text" value="0"/> ft Atmospheric Pressure: <input type="text" value="14.73"/> Psi (Abs) Flowing Temperature: <input type="text" value="60.0"/> F Base Pressure: <input type="text" value="14.73"/> Psi (Abs) Base Temperature: <input type="text" value="60.0"/> F <hr/> Specific Gravity: <input type="text" value="0.600"/> Viscosity: <input type="text" value="0.000007"/> Lbm/Ft-sec Specific Heat Ratio: <input type="text" value="1.300"/>		<b>Miscellaneous...</b> In-Service Date: <input type="text" value="07/04/2004"/> Jurisdiction: <input type="text" value="US DOT"/> Designed By: <input type="text" value="Joe Designer"/> Design Date: <input type="text" value="03/06/2004"/> Entered/Revised By: <input type="text" value="Joe Entry"/> Entry/Revision Date: <input type="text" value="07/07/2004"/> Comments/Notes: <input type="text" value="Regulator/Relief Valve"/>		
<input type="button" value="Back"/>		<input type="button" value="Next"/>		
Location/Configuration		Gas Properties/Miscellaneous		

### Data Items

**Base Pressure** - Specifies the pressure basis for the entered and calculated volumes.

**Base Temperature** - Specifies the temperature basis for the entered and calculated volumes.

**Comments/Notes** - Displays the comments and notes associated with the station configuration, location, or operation.

**Design Date** - Specifies the date when the station was initially designed. Enter a value using the following format - MM/DD/YYYY.

**Designed By** - Specifies who designed the station.

**Elevation** - Specifies the height above the mean sea level of the station's location.

**Entered/Revised By** - Specifies who entered or last reviewed the data for the station.

**Entry/Revision Date** - Specifies the date when the station data was entered or last revised. Enter a value using the following format - MM/DD/YYYY.

**Flowing Temperature** - Specifies the average gas flowing temperature at the station's inlet.



**In-Service Date** - Specifies the date when the station was put into service. Enter a value using the following format - MM/DD/YYYY.

**Jurisdiction** - Specifies the regulatory jurisdiction for the station.

**Specific Gravity** - Specifies the average specific gravity of the gas flowing through the station. The value is dimensionless.

**Specific Heat Ratio** - Specifies the average heat ratio of the gas flowing through the station. The value is dimensionless.

**Viscosity** - Specifies the average absolute or dynamic viscosity of the gas flowing through the station.

### Calculated Items

---

**Atmospheric Pressure** - Displays the calculated atmospheric pressure based on the specified elevation.

### Notes & Considerations

---

- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Run/Stage Tab - Up(stream) Piping Tab

General	Run 1 Stage 1	Compliance	Inspection	Images																				
<b>Run Configuration...</b> Run Type: Working - 1st Cut Stage Style: Regulator - Relief Valve		<b>Hydraulic Data...</b> Min Inlet Pressure: 50.00 Psi Max Inlet Pressure: 100.00 Psi MAOP: 100.00 Psi Efficiency: 95.00 Percent Flow Equation: IGT-Improved																						
<b>Piping Components...</b> P: 2S-STD - Len: 10.0 Add Delete Insert Clear		<b>Calculated Values...</b> <table border="1"> <thead> <tr> <th></th> <th>Normal...</th> <th>Failed...</th> <th></th> </tr> </thead> <tbody> <tr> <td>Outlet Pressure:</td> <td>49.98</td> <td>99.93</td> <td>Psi</td> </tr> <tr> <td>Pressure Drop:</td> <td>0.02</td> <td>0.07</td> <td>Psi</td> </tr> <tr> <td>Flow Rate:</td> <td>10.000</td> <td>29.978</td> <td>Mcfh</td> </tr> <tr> <td>Velocity:</td> <td>27.13</td> <td>45.91</td> <td>Feet/sec</td> </tr> </tbody> </table>				Normal...	Failed...		Outlet Pressure:	49.98	99.93	Psi	Pressure Drop:	0.02	0.07	Psi	Flow Rate:	10.000	29.978	Mcfh	Velocity:	27.13	45.91	Feet/sec
	Normal...	Failed...																						
Outlet Pressure:	49.98	99.93	Psi																					
Pressure Drop:	0.02	0.07	Psi																					
Flow Rate:	10.000	29.978	Mcfh																					
Velocity:	27.13	45.91	Feet/sec																					
<Back		Next>																						
Up Piping	Up Device	Int Piping	Down Device	Down Piping																				
		Stack Piping	Meter/Recorder																					

### Data Items

**Efficiency** - Specifies the pipe flow efficiency value to use for the upstream piping components associated with the selected run and stage.

**Flow Equation** - Specifies the pipe flow equation for the upstream piping components associated with the selected run and stage.

**MAOP** - Specifies the Maximum Allowable Operating Pressure of the upstream piping components associated with the selected run and stage.

**Maximum Inlet Pressure** - Specifies the maximum actual operating pressure at the inlet/upstream end of the upstream piping.

**Minimum Inlet Pressure** - Specifies the minimum actual operating pressure at the inlet/upstream end of the upstream piping.

**Piping Components** - Displays the components associated with the upstream piping of the associated stage and run. The *Piping Components* list can contain pipe and fittings. Use the command buttons directly below the list to modify the contents. The list must contain at least one component.

**Run Type** - Specifies the operating type of the associated run.



**Stage Style** - Specifies the configuration type at the associated stage.

### Calculated Items

---

**Flow Rate** - Displays the calculated flow rate through the upstream piping under the associated operating conditions.

**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream end of the upstream piping of the selected run and stage.

**Pressure Drop** - Displays the calculated linear pressure drop across the upstream piping of the selected run and stage.

**Velocity** - Displays the maximum calculated velocity in the upstream piping of the selected run and stage.

### Command Buttons

---

**Add** - Adds an item to the *Piping Components* list. The new item will be added to the end of the list.

**Clear** - When associated with the *Piping Components* list, removes all of the components from the associated list. Otherwise, it sets all data items to blank (null) values.

**Delete** - Deletes an item from the *Piping Components* list. The currently highlighted item will be deleted from the list.

**Insert** - Inserts an item into the *Piping Components* list. The new item will be added to the list immediately before the currently highlighted item.

### Notes & Considerations

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- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.



### Run/Stage Tab - Up(stream) Device Tab - Device Data Tab

General		Run 1 Stage 1		Compliance		Inspection		Images																									
<b>Device Data</b>					<b>Equipment Data</b>																												
<b>Size/Type Code</b> FC 299 1/2					<b>Calculated Values</b>																												
<b>Rated Valve Factor:</b> 200 / 203					<table border="1"> <thead> <tr> <th></th> <th>Normal...</th> <th>Failed...</th> <th></th> </tr> </thead> <tbody> <tr> <td>Inlet Pressure:</td> <td>49.98</td> <td>99.93</td> <td>Psi</td> </tr> <tr> <td>Outlet Pressure:</td> <td>30.00</td> <td>40.10</td> <td>Psi</td> </tr> <tr> <td>Pressure Drop:</td> <td>19.98</td> <td>59.82</td> <td>Psi</td> </tr> <tr> <td>Flow Rate:</td> <td>10.000</td> <td>29.978</td> <td>Mcfh</td> </tr> <tr> <td>Maximum Capacity:</td> <td>15.158</td> <td>29.978</td> <td>Mcfh</td> </tr> </tbody> </table>						Normal...	Failed...		Inlet Pressure:	49.98	99.93	Psi	Outlet Pressure:	30.00	40.10	Psi	Pressure Drop:	19.98	59.82	Psi	Flow Rate:	10.000	29.978	Mcfh	Maximum Capacity:	15.158	29.978	Mcfh
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Flow Rate:	10.000	29.978	Mcfh																														
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<b>Set Pressure:</b> 30.00 Psi					<b>Field Settings</b>																												
<input type="checkbox"/> Entered Capacity Value:					<b>Normal Operating Mode...</b> Controlling Regulator In Control Mode																												
<input type="checkbox"/> Token Relief Installed					<b>Failed Operating Mode...</b> Controlling Regulator In Failure Mode - Assumed																												
<input type="button" value="Back"/>					<input type="button" value="Next"/>																												
Up Piping		Up Device		Int Piping		Down Device		Down Piping																									
								Stack Piping																									
								Meter/Recorder																									

### Data Items

**Entered Capacity Value** - When selected, a data field will be displayed to specify the entered capacity value.

**Monitor Set Pressure** - Specifies the set pressure for an upstream device that is configured as an upstream or working monitor. This item is only displayed when the upstream device is configured as one of these monitor types.

**Set Pressure** - Specifies the set pressure for the upstream device. This item is only displayed when the device is a regulator and a non-monitor device.

**Set Pressure Regulator 1** - If there are dual regulators, specifies the set pressure for the “first” upstream devices. This item is only displayed when the stage style is set to a dual regulator configuration.

**Set Pressure Regulator 2** - If there are dual regulators, specifies the set pressure for the “second” upstream device. This item is only displayed when the stage style is set to a dual regulator configuration.

**Size/Type Code** - Specifies the Size/Type Code associated with the device.

**Token Relief Installed** - When selected, a token relief valve is installed. This item is only displayed when the upstream device is a regulator.



**Token Set Pressure** - If a token relief valve is installed, specifies the set pressure for the token relief valve. This item is only displayed when the *Token Relief Installed* option is selected.

**Working Set Pressure** - Specifies the set pressure for an upstream device that is configured as a working monitor. This item is only displayed when the upstream device is configured as a working monitor.

### Calculated Items

---

**Rated Valve Factor** - Displays the working/failed factors associated with the associated specified valve.

### Command Buttons

---

**i** - Displays information about the associated item. The contents of the information screen generally reflect the various data values contained in the associated Property Table.

**Size/Type Code** - Displays a selection screen to select the device being used.

### Notes & Considerations

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- The contents of the *Device Data* data tab will vary depending on the run and station configuration.
- A token relief valve is only considered to signal that an overpressure condition has occurred. It is not considered an Over Pressure Protection (OPP) device.
- When the *Entered Capacity Value* option is selected, the entered value is used in the compliance comparison; no capacity and limited hydraulic calculations are performed for the associated device.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Run/Stage Tab - Up(stream) Device Tab - Equipment Data Tab

General		Run 1 Stage 1		Compliance		Inspection		Images													
Device Data			Equipment Data			Calculated Values		Field Settings													
Data Item...	Item Value...																				
Device - Size/Type Code	FC 299 1/2																				
Device - Manufacturer	Fisher Controls																				
Device - Model	299																				
Device - Body Size, Inches	1-1/2																				
Device - Orifice Size, Inches	1/2																				
Device - Serial Number																					
Device - Connection Style	Screwed/Threaded																				
Device - Max Body Pressure	125.00																				
Device - Spring Number																					
Device - Spring Color	Unknown																				
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Device	Settings																				
	Initial	Final	Units																		
Device/Pilot 1	0	0	Psi																		
Pilot 2		0	Psi																		
<Back			Next>																		
Up Piping		Up Device		Int Piping		Down Device		Down Piping													
								Stack Piping													
								Meter/Recorder													

### Data Items

#### Device -

**Connection Style** - Specifies the end connection style of the device.

**Diaphragm Size** - Specifies the main body diaphragm size of the device.

**Diaphragm Type** - Specifies the main body diaphragm type of the device.

**Maximum Body Pressure** - Specifies the maximum pressure of the device's main body.

**Pressure Units** - Specifies the dimensional units for the associated pressure values.

**Serial Number** - Specifies the serial number of the device.

**Spring Color** - Specifies the color of the main spring color used in the device.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the main spring.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the main spring.



**Spring Number** - Specifies the sizing/rating number of the main spring.

### *Pilot 1/Pilot 2 -*

**Manufacturer** - Specifies the manufacturer's name of the associated pilot regulator.

**Maximum Body Pressure** - Specifies the maximum body rating of the associated pilot regulator.

**Model** - Specifies the model name or number of the associated pilot regulator.

**Pressure Units** - Specifies the dimensional units of the associated pressure values.

**Spring Color** - Specifies the color of the spring used in the associated pilot regulator.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the spring used in the associated pilot regulator.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the spring used in the associated pilot regulator.

**Spring Number** - Specifies the sizing/rating number of the spring used in the associated pilot regulator.

### **Calculated Items**

---

**Device** - These values are taken from the associated Property Table for the specified Size/Type Code.

**Body Size** - Displays the body size associated with the selected Size/Type Code.

**Manufacturer** - Displays the manufacturer's name associated with the selected Size/Type Code.

**Model** - Displays the model name or number associated with the selected Size/Type Code.

**Orifice Size** - Displays the orifice size associated with the selected Size/Type Code.

**Size/Type Code** - Displays the Size/Type Code of the selected device (for reference only).

### **Notes & Considerations**

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- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Run/Stage Tab - Up(stream) Device Tab - Calculated Values Tab

General		Run 1 Stage 1		Compliance		Inspection		Images																									
<b>Device Data</b>				<b>Equipment Data</b>		<b>Calculated Values</b>																											
<b>Size/Type Code</b> FC 299 1/2						<b>Field Settings</b>																											
<b>Rated Valve Factor:</b> 200 / 203						<table border="1"> <thead> <tr> <th></th> <th>Normal...</th> <th>Failed...</th> <th></th> </tr> </thead> <tbody> <tr> <td>Inlet Pressure:</td> <td>49.98</td> <td>99.93</td> <td>Psi</td> </tr> <tr> <td>Outlet Pressure:</td> <td>30.00</td> <td>40.10</td> <td>Psi</td> </tr> <tr> <td>Pressure Drop:</td> <td>19.98</td> <td>59.82</td> <td>Psi</td> </tr> <tr> <td>Flow Rate:</td> <td>10.000</td> <td>29.978</td> <td>Mcfh</td> </tr> <tr> <td>Maximum Capacity:</td> <td>15.158</td> <td>29.978</td> <td>Mcfh</td> </tr> </tbody> </table>					Normal...	Failed...		Inlet Pressure:	49.98	99.93	Psi	Outlet Pressure:	30.00	40.10	Psi	Pressure Drop:	19.98	59.82	Psi	Flow Rate:	10.000	29.978	Mcfh	Maximum Capacity:	15.158	29.978	Mcfh
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<b>Set Pressure:</b> 30.00 Psi						<b>Normal Operating Mode...</b> Controlling Regulator In Control Mode.																											
<input type="checkbox"/> Entered Capacity Value:						<b>Failed Operating Mode...</b> Controlling Regulator In Failure Mode - Assumed																											
<input type="checkbox"/> Token Relief Installed																																	
<input type="button" value="Back"/>						<input type="button" value="Next"/>																											
Up Piping		Up Device		Int Piping		Down Device		Down Piping																									
								Stack Piping																									
								Meter/Recorder																									

### Calculated Items

**Failed Operating Mode** - Displays the calculated operating mode for the upstream device under failed conditions.

**Flow Rate** - Displays the calculated flow rate through the upstream device at the associated conditions.

**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream side of the device at the associated conditions.

**Maximum Capacity** - Displays the calculated maximum flow rate, which could be produced by the upstream device at the associated conditions.

**Normal Operating Mode** - Displays the calculated operating mode under normal conditions for the upstream device.

**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream side of the upstream device at the associated conditions.

**Pressure Drop** - Displays the calculated linear pressure drop across the upstream device at the associated conditions.



### Notes & Considerations

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- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Run/Stage Tab - Up(stream) Device Tab - Field Settings Tab

General		Run 1 Stage 1		Compliance		Inspection		Images													
Device Data			Equipment Data			Calculated Values		Field Settings													
Data Item...	Item Value...																				
Device - Size/Type Code	FC 299 1/2																				
Device - Manufacturer	Fisher Controls																				
Device - Model	299																				
Device - Body Size, Inches	1-1/2																				
Device - Orifice Size, Inches	1/2																				
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Device	Settings																				
	Initial	Final	Units																		
Device/Pilot 1	0	0	Psi																		
Pilot 2		0	Psi																		
<Back			Next>																		
Up Piping		Up Device		Int Piping		Down Device		Down Piping													
								Stack Piping													
								Meter/Recorder													

### Data Items

**Date** - Specifies the date when the settings were made or observed. Enter a value using the following format - MM/DD/YYYY.

**Device/Pilot 1** - Specifies the initial (as found) and the final (as left) settings for the main device and/or main pilot.

**Performed By** - Specifies who made or observed the settings.

**Pilot 2** - Specifies the initial (as found) and the final (as left) settings for the secondary pilot.

### Notes & Considerations

- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.



### Run/Stage Tab - *Int(ermediate) Piping Tab*

General	Run 1 Stage 1	Compliance	Inspection	Images																								
<b>Piping Components...</b> P: 2S-STD - Len: 1.0 F: First Relief Branch - Qty: 1 P: 2S-STD - Len: 1.0 F: Second Relief Branch - Qty: 1 P: 2S-STD - Len: 5.0  <div> <input type="button" value="Add"/> <input type="button" value="Delete"/> </div> <div> <input type="button" value="Insert"/> <input type="button" value="Clear"/> </div>		<b>Hydraulic Data...</b> MAOP: <input type="text" value="100.00"/> Psi Efficiency: <input type="text" value="95.00"/> Percent Flow Equation: <input type="text" value="IGT-Improved"/>																										
		<table border="1"> <thead> <tr> <th>Calculated Values..</th> <th>Normal...</th> <th>Failed...</th> <th></th> </tr> </thead> <tbody> <tr> <td>Inlet Pressure:</td> <td>30.00</td> <td>40.10</td> <td>Psi</td> </tr> <tr> <td>Outlet Pressure:</td> <td>30.00</td> <td>40.00</td> <td>Psi</td> </tr> <tr> <td>Pressure Drop:</td> <td>0.00</td> <td>0.10</td> <td>Psi</td> </tr> <tr> <td>Flow Rate:</td> <td>10.000</td> <td>29.978</td> <td>Mcfh</td> </tr> <tr> <td>Velocity:</td> <td>39.26</td> <td>96.17</td> <td>Feet/sec</td> </tr> </tbody> </table>			Calculated Values..	Normal...	Failed...		Inlet Pressure:	30.00	40.10	Psi	Outlet Pressure:	30.00	40.00	Psi	Pressure Drop:	0.00	0.10	Psi	Flow Rate:	10.000	29.978	Mcfh	Velocity:	39.26	96.17	Feet/sec
Calculated Values..	Normal...	Failed...																										
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<input type="button" value="Back"/>		<input type="button" value="Next"/>																										
<input type="button" value="Up Piping"/>		<input type="button" value="Up Device"/>		<input type="button" value="Int Piping"/>																								
		<input type="button" value="Down Device"/>		<input type="button" value="Down Piping"/>																								
		<input type="button" value="Stack Piping"/>		<input type="button" value="Meter/Recorder"/>																								

### Data Items

**Efficiency** - Specifies the pipe flow efficiency value for the intermediate piping components associated with the selected run and stage.

**Flow Equation** - Specifies the pipe flow equation for the intermediate piping components associated with the selected run and stage.

**MAOP** - Specifies the Maximum Allowable Operating Pressure of the intermediate piping components associated with the selected run and stage.

**Piping Components** - Displays the components associated with the intermediate piping of the associated stage and run. The *Piping Components* list can contain pipe and fittings. Use the command buttons directly below the list to modify the contents.

### Calculated Items

**Flow Rate** - Displays the calculated flow rate through the intermediate piping under the associated operating conditions.





**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream end of the intermediate piping of the selected run and stage.

**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream end of the intermediate piping of the selected run and stage.

**Pressure Drop** - Displays the calculated linear pressure drop across the intermediate piping of the selected run and stage.

**Velocity** - Displays the maximum calculated velocity in the intermediate piping of the selected run and stage.

### Command Buttons

---

**Add** - Adds an item to the *Piping Components* list. The new item will be added to the end of the list.

**Clear** - When associated with the *Piping Components* list, removes all of the components from the associated list. Otherwise, it sets all data items to blank (null) values.

**Delete** - Deletes an item from the *Piping Components* list. The currently highlighted item will be deleted from the list.

**Insert** - Inserts an item into the *Piping Components* list. The new item will be added to the list immediately before the currently highlighted item.

### Notes & Considerations

---

- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Run/Stage Tab - Down(stream) Device Tab - Device Data Tab

General		Run 1 Stage 1	Compliance	Inspection	Images
<b>Device Data</b>		<b>Equipment Data</b>		<b>Calculated Values</b>	
<b>Size/Type Code</b> : FC 1808		<b>Rated Valve Factor</b> : 1410		<b>Normal...</b>	
<b>Set Pressure</b> : 40.00 Psi		<b>Min Build-Up Pressure</b> : 0.00 Psi		<b>Failed...</b>	
<b>Number Of Valves</b> : 1		<input type="checkbox"/> Entered Capacity Value:		<b>Inlet Pressure</b> : 30.00 40.00 Psi	
				<b>Outlet Pressure</b> : 0.00 0.27 Psi	
				<b>Pressure Drop</b> : 30.00 39.73 Psi	
				<b>Flow Rate</b> : N/C 28.978 Mcfh	
				<b>Maximum Capacity</b> : N/C 157.522 Mcfh	
				<b>Normal Operating Mode...</b> Continuously Closed	
				<b>Failed Operating Mode...</b> Popping - The Full Open Inlet Pressure To The Relief	
<input type="button" value="Back"/>				<input type="button" value="Next"/>	
Up Piping	Up Device	Int Piping	Down Device	Down Piping	Stack Piping
					Meter/Recorder

### Data Items

**Entered Capacity Value** - When selected, a data field will be displayed to enter the capacity value.

**Minimum Build-Up Pressure** - Specifies a User-defined minimum build-up pressure for the downstream device. This item is only displayed when the downstream device is a relief valve.

**Number Of Valves** - Specifies the quantity (number) of relief valve devices installed. This item is only displayed when the downstream device is a relief valve.

**Set Pressure** - Specifies the set pressure for the downstream device.

**Shared Device** - When selected, this device is shared between runs for the same stage. This item is only displayed when the downstream is a relief valve. This item is useful when single regulators are installed on runs one and two, and they share the same relief valve.

**Size/Type Code** - Specifies the Size/Type Code for the selected device.

**Token Relief Installed** - When selected, a token relief valve is installed. This item is only displayed when the downstream device is a regulator.

**Token Set Pressure** - If a token relief valve is installed, specifies the set pressure for the token relief valve. This item is only displayed when the *Token Relief Installed* item is selected.

### Calculated Items

---

**Rated Valve Factor** - Displays the specified or rated valve factor or coefficient associated with the specified device.

### Command Buttons

---

**i** - Displays information about the associated item. The contents of the information screen generally reflect the various data values contained in the associated Property Table.

**Size/Type Code** - Displays a selection screen to select the device being used.

### Notes & Considerations

---

- The content of the *Device Data* tab will vary depending on the run and station configuration.
- When the shared option is selected, a relief valve will be shown for the stage for both runs. When the calculation is performed, the relief valve capacity is compared against the failed regulator capacity for each run. The intermediate piping for each run is assumed to connect between the associated upstream device and the shared relief valve. The downstream piping is assumed to connect from the downstream end of the intermediate piping.
- A token relief valve is only considered to signal that an overpressure condition has occurred. It is not considered an Over Pressure Protection (OPP) device.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Run/Stage Tab - Down(stream) Device Tab - Equipment Data Tab

General		Run 1 Stage 1	Compliance	Inspection	Images																																			
<div> <div>Device Data</div> <table border="1"> <thead> <tr> <th>Data Item...</th> <th>Item Value...</th> </tr> </thead> <tbody> <tr> <td>Device - Size/Type Code</td> <td>FC 1808</td> </tr> <tr> <td>Device - Manufacturer</td> <td>Fisher Controls</td> </tr> <tr> <td>Device - Model</td> <td>1808</td> </tr> <tr> <td>Device - Body Size, Inches</td> <td>2</td> </tr> <tr> <td>Device - Orifice Size, Inches</td> <td></td> </tr> <tr> <td>Device - Serial Number</td> <td></td> </tr> <tr> <td>Device - Connection Style</td> <td>N/A</td> </tr> <tr> <td>Device - Max Body Pressure</td> <td>0.00</td> </tr> <tr> <td>Device - Spring Number</td> <td></td> </tr> <tr> <td>Device - Spring Color</td> <td>Unknown</td> </tr> </tbody> </table> </div> <div> <div>Equipment Data</div> </div>		Data Item...	Item Value...	Device - Size/Type Code	FC 1808	Device - Manufacturer	Fisher Controls	Device - Model	1808	Device - Body Size, Inches	2	Device - Orifice Size, Inches		Device - Serial Number		Device - Connection Style	N/A	Device - Max Body Pressure	0.00	Device - Spring Number		Device - Spring Color	Unknown	<div>Calculated Values</div>		<div>Field Settings</div> <table border="1"> <thead> <tr> <th rowspan="2">Device</th> <th colspan="2">Settings</th> <th rowspan="2">Units</th> </tr> <tr> <th>Initial</th> <th>Final</th> </tr> </thead> <tbody> <tr> <td>Device/Pilot 1</td> <td>0</td> <td>0</td> <td>Psi</td> </tr> <tr> <td>Pilot 2</td> <td>0</td> <td></td> <td>Psi</td> </tr> </tbody> </table>	Device	Settings		Units	Initial	Final	Device/Pilot 1	0	0	Psi	Pilot 2	0		Psi
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<div>&lt;Back</div>		<div>Next&gt;</div>																																						
Up Piping	Up Device	Int Piping	Down Device	Down Piping	Stack Piping																																			
		Meter/Recorder																																						

### Data Items

#### Device -

**Connection Style** - Specifies the end connection style of the device.

**Diaphragm Size** - Specifies the main body diaphragm size of the device.

**Diaphragm Type** - Specifies the main body diaphragm type of the device.

**Maximum Body Pressure** - Specifies the maximum pressure of the device's main body.

**Pressure Units** - Specifies the dimensional units for the associated pressure values.

**Serial Number** - Specifies the serial number of the device.

**Spring Color** - Specifies the color of the main spring color used in the device.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the main spring.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the main spring.



**Spring Number** - Specifies the sizing/rating number of the main spring.

### *Pilot 1/Pilot 2 -*

**Manufacturer** - Specifies the manufacturer's name of the associated pilot regulator.

**Maximum Body Pressure** - Specifies the maximum body rating of the associated pilot regulator.

**Model** - Specifies the model name or number of the associated pilot regulator.

**Pressure Units** - Specifies the dimensional units of the associated pressure values.

**Spring Color** - Specifies the color of the spring used in the associated pilot regulator.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the spring used in the associated pilot regulator.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the spring used in the associated pilot regulator.

**Spring Number** - Specifies the sizing/rating number of the spring used in the associated pilot regulator.

### **Calculated Items**

---

**Device** - These values are taken from the associated Property Table for the specified Size/Type Code.

**Body Size** - Displays the body size associated with the selected Size/Type Code.

**Manufacturer** - Displays the manufacturer's name associated with the selected Size/Type Code.

**Model** - Displays the model name or number associated with the selected Size/Type Code.

**Orifice Size** - Displays the orifice size associated with the selected Size/Type Code.

**Size/Type Code** - Displays the Size/Type Code of the selected device (for reference only).

### **Notes & Considerations**

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- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.



### Run/Stage Tab - Down(stream) Device Tab - Calculated Values Tab

General		Run 1 Stage 1	Compliance	Inspection	Images																																								
<b>Device Data</b>		<b>Equipment Data</b>		<b>Calculated Values</b>																																									
<b>Field Settings</b>																																													
Size/Type Code: FC 1808 Rated Valve Factor: 1410 Set Pressure: 40.00 Psi Min Build-Up Pressure: 0.00 Psi Number Of Valves: 1 <input type="checkbox"/> Entered Capacity Value:				<table border="1"> <thead> <tr> <th></th> <th>Normal...</th> <th>Failed...</th> <th></th> </tr> </thead> <tbody> <tr> <td>Inlet Pressure:</td> <td>30.00</td> <td>40.00</td> <td>Psi</td> </tr> <tr> <td>Outlet Pressure:</td> <td>0.00</td> <td>0.27</td> <td>Psi</td> </tr> <tr> <td>Pressure Drop:</td> <td>30.00</td> <td>39.73</td> <td>Psi</td> </tr> <tr> <td>Flow Rate:</td> <td>N/C</td> <td>28.978</td> <td>Mcfh</td> </tr> <tr> <td>Maximum Capacity:</td> <td>N/C</td> <td>157.522</td> <td>Mcfh</td> </tr> <tr> <td colspan="4">Normal Operating Mode...</td> </tr> <tr> <td colspan="4">Continuously Closed</td> </tr> <tr> <td colspan="4">Failed Operating Mode...</td> </tr> <tr> <td colspan="4">Popping - The Full Open Inlet Pressure To The Relief</td> </tr> </tbody> </table>			Normal...	Failed...		Inlet Pressure:	30.00	40.00	Psi	Outlet Pressure:	0.00	0.27	Psi	Pressure Drop:	30.00	39.73	Psi	Flow Rate:	N/C	28.978	Mcfh	Maximum Capacity:	N/C	157.522	Mcfh	Normal Operating Mode...				Continuously Closed				Failed Operating Mode...				Popping - The Full Open Inlet Pressure To The Relief			
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<input type="button" value="Back"/>				<input type="button" value="Next"/>																																									
Up Piping	Up Device	Int Piping	Down Device	Down Piping	Stack Piping																																								
Meter/Recorder																																													

### Calculated Items

**Failed Operating Mode** - Displays the calculated operating mode, under failed conditions, for the downstream device.

**Flow Rate** - Displays the calculated flow rate through the downstream device at the associated conditions.

**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream pressure side of the downstream device at the associated conditions.

**Maximum Capacity** - Displays the calculated maximum flow rate, which could be produced by the downstream device at the associated conditions.

**Normal Operating Mode** - Displays the calculated operating mode, under normal conditions, for the downstream device.

**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream side of the downstream device at the associated conditions.

**Pressure Drop** - Displays the calculated linear pressure drop across the downstream device at the associated conditions.

### Notes & Considerations

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- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.



### Run/Stage Tab - Down(stream) Device Tab - Field Settings Tab

General		Run 1 Stage 1	Compliance	Inspection	Images																																									
<table border="1"> <thead> <tr> <th>Data Item...</th> <th>Item Value...</th> </tr> </thead> <tbody> <tr> <td>Device - Size/Type Code</td> <td>FC 1808</td> </tr> <tr> <td>Device - Manufacturer</td> <td>Fisher Controls</td> </tr> <tr> <td>Device - Model</td> <td>1808</td> </tr> <tr> <td>Device - Body Size, Inches</td> <td>2</td> </tr> <tr> <td>Device - Orifice Size, Inches</td> <td></td> </tr> <tr> <td>Device - Serial Number</td> <td></td> </tr> <tr> <td>Device - Connection Style</td> <td>N/A</td> </tr> <tr> <td>Device - Max Body Pressure</td> <td>0.00</td> </tr> <tr> <td>Device - Spring Number</td> <td></td> </tr> <tr> <td>Device - Spring Color</td> <td>Unknown</td> </tr> </tbody> </table>		Data Item...	Item Value...	Device - Size/Type Code	FC 1808	Device - Manufacturer	Fisher Controls	Device - Model	1808	Device - Body Size, Inches	2	Device - Orifice Size, Inches		Device - Serial Number		Device - Connection Style	N/A	Device - Max Body Pressure	0.00	Device - Spring Number		Device - Spring Color	Unknown	<table border="1"> <thead> <tr> <th colspan="2">Calculated Values</th> <th colspan="2">Field Settings</th> </tr> <tr> <th>Device</th> <th>Settings</th> <th>Initial</th> <th>Final</th> <th>Units</th> </tr> </thead> <tbody> <tr> <td>Device/Pilot 1</td> <td></td> <td>0</td> <td>0</td> <td>Psi</td> </tr> <tr> <td>Pilot 2</td> <td></td> <td>0</td> <td></td> <td>Psi</td> </tr> </tbody> </table>				Calculated Values		Field Settings		Device	Settings	Initial	Final	Units	Device/Pilot 1		0	0	Psi	Pilot 2		0		Psi
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Device	Settings	Initial	Final	Units																																										
Device/Pilot 1		0	0	Psi																																										
Pilot 2		0		Psi																																										
<div>&lt;Back</div>		<div>Next&gt;</div>																																												
Up Piping		Up Device	Int Piping	Down Device	Down Piping																																									
		Stack Piping	Meter/Recorder																																											

### Data Items

**Date** - Specifies the date when the settings were made or observed. Enter a value using the following format - MM/DD/YYYY.

**Device/Pilot 1** - Specifies the initial (as found) and the final (as left) settings for the main device and/or main pilot.

**Performed By** - Specifies who made or observed the settings.

**Pilot 2** - Specifies the initial (as found) and the final (as left) settings for the secondary pilot.

### Notes & Considerations

- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.



### Run/Stage Tab - Down(stream) Piping Tab

General	Run 1 Stage 1	Compliance	Inspection	Images																								
<b>Piping Components...</b> P: 25-STD - Len: 10.0  <div> AddDelete  InsertClear </div>		<b>Hydraulic Data...</b> MAOP: 66.00 Psi Efficiency: 95.00 Percent Flow Equation: IGT-Improved  <table> <thead> <tr> <th>Calculated Values...</th> <th>Normal...</th> <th>Failed...</th> <th></th> </tr> </thead> <tbody> <tr> <td>Inlet Pressure:</td> <td>30.00</td> <td>40.00</td> <td>Psi</td> </tr> <tr> <td>Outlet Pressure:</td> <td>29.97</td> <td>40.00</td> <td>Psi</td> </tr> <tr> <td>Pressure Drop:</td> <td>0.03</td> <td>0.00</td> <td>Psi</td> </tr> <tr> <td>Flow Rate:</td> <td>10.000</td> <td>1.000</td> <td>Mcfh</td> </tr> <tr> <td>Velocity:</td> <td>39.28</td> <td>3.21</td> <td>Feet/sec</td> </tr> </tbody> </table>			Calculated Values...	Normal...	Failed...		Inlet Pressure:	30.00	40.00	Psi	Outlet Pressure:	29.97	40.00	Psi	Pressure Drop:	0.03	0.00	Psi	Flow Rate:	10.000	1.000	Mcfh	Velocity:	39.28	3.21	Feet/sec
Calculated Values...	Normal...	Failed...																										
Inlet Pressure:	30.00	40.00	Psi																									
Outlet Pressure:	29.97	40.00	Psi																									
Pressure Drop:	0.03	0.00	Psi																									
Flow Rate:	10.000	1.000	Mcfh																									
Velocity:	39.28	3.21	Feet/sec																									
<Back		Next>																										
Up Piping		Up Device	Int Piping	Down Device																								
		Down Piping	Stack Piping	Meter/Recorder																								

### Data Items

**Efficiency** - Specifies the pipe flow efficiency value for the downstream piping components associated with the selected run and stage.

**Flow Equation** - Specifies the pipe flow equation for the downstream piping components associated with the selected run and stage.

**MAOP** - Specifies the Maximum Allowable Operating Pressure of the downstream piping components associated with the selected run and stage.

**Piping Components** - Displays the components associated with the downstream piping of the associated stage and run. The *Piping Components* list can contain pipe and fittings. Use the command buttons directly below the list to modify the contents. The list must contain at least one component.

### Calculated Items

**Flow Rate** - Displays the calculated flow rate through the downstream piping under the associated operating conditions.



**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream end of the downstream piping of the selected run and stage.

**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream end of the downstream piping of the selected run and stage.

**Pressure Drop** - Displays the calculated linear pressure drop across the downstream piping of the selected run and stage.

**Velocity** - Displays the maximum calculated velocity in the downstream piping of the selected run and stage.

### Command Buttons

---

**Add** - Adds an item to the *Piping Components* list. The new item will be added to the end of the list.

**Clear** - When associated with the *Piping Components* list, removes all of the components from the associated list. Otherwise, it sets all data items to blank (null) values.

**Delete** - Deletes an item from the *Piping Components* list. The currently highlighted item will be deleted from the list.

**Insert** - Inserts an item into the *Piping Components* list. The new item will be added to the list immediately before the currently highlighted item.

### Notes & Considerations

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- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Run/Stage Tab - Stack Piping Tab

General	Run 1 Stage 1	Compliance	Inspection	Images																								
<b>Piping Components...</b> P: 25-STD - Len: 5.0  <div> AddDelete  InsertClear </div>		<b>Hydraulic Data...</b> Efficiency: 95.00 Percent Flow Equation: IGT-Improved  <table> <thead> <tr> <th>Calculated Values...</th> <th>Normal...</th> <th>Failed...</th> <th></th> </tr> </thead> <tbody> <tr> <td>Inlet Pressure:</td> <td>0.00</td> <td>0.27</td> <td>Psi</td> </tr> <tr> <td>Outlet Pressure:</td> <td>N/C</td> <td>0.00</td> <td>Psi</td> </tr> <tr> <td>Pressure Drop:</td> <td>N/C</td> <td>0.27</td> <td>Psi</td> </tr> <tr> <td>Flow Rate:</td> <td>N/C</td> <td>28.978</td> <td>Mcfh</td> </tr> <tr> <td>Velocity:</td> <td>N/C</td> <td>345.39</td> <td>Feet/sec</td> </tr> </tbody> </table>			Calculated Values...	Normal...	Failed...		Inlet Pressure:	0.00	0.27	Psi	Outlet Pressure:	N/C	0.00	Psi	Pressure Drop:	N/C	0.27	Psi	Flow Rate:	N/C	28.978	Mcfh	Velocity:	N/C	345.39	Feet/sec
Calculated Values...	Normal...	Failed...																										
Inlet Pressure:	0.00	0.27	Psi																									
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Flow Rate:	N/C	28.978	Mcfh																									
Velocity:	N/C	345.39	Feet/sec																									
<Back		Next>																										
Up Piping	Up Device	Int Piping	Down Device	Down Piping																								
Stack Piping		Meter/Recorder																										

### Data Items

**Efficiency** - Specifies the pipe flow efficiency value for the stack piping components associated with the selected run and stage.

**Flow Equation** - Specifies the pipe flow equation for the stack piping components associated with the selected run and stage.

**Piping Components** - Displays the components associated with the stack piping of the associated stage and run. The *Piping Components* list can contain pipe and fittings. Use the command buttons directly below the list to modify the contents. The list must contain at least one component.

### Calculated Items

**Flow Rate** - Displays the calculated flow rate through the stack piping under the associated operating conditions.

**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream end of the stack piping of the selected run and stage.



**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream end of the stack piping of the selected run and stage.

**Pressure Drop** - Displays the calculated linear pressure drop across the stack piping of the selected run and stage.

**Velocity** - Displays the maximum calculated velocity in the stack piping of the selected run and stage.

### Command Buttons

---

**Add** - Adds an item to the *Piping Components* list. The new item will be added to the end of the list.

**Clear** - When associated with the *Piping Components* list, removes all of the components from the associated list. Otherwise, it sets all data items to blank (null) values.

**Delete** - Deletes an item from the *Piping Components* list. The currently highlighted item will be deleted from the list.

**Insert** - Inserts an item into the *Piping Components* list. The new item will be added to the list immediately before the currently highlighted item.

### Notes & Considerations

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- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Run/Stage Tab - Meter/Recorder Tab

### Data Items

**Connection Type** - Specifies the end connection type for the meter. This item is only displayed when a meter Size/Type Code has been selected.

**High Range** - Specifies the upper or high-pressure range of the recorder. This item is only displayed when a recorder make/type has been selected.

**Low Range** - Specifies the lower or low-pressure range of the recorder. This item is only displayed when a recorder make/type has been selected.

**Make/Type** - Specifies the manufacturer's name and model or type of the data recorder (if any) installed at the station.

**Maximum Capacity** - Specifies the maximum flow capacity of the meter. This item is only displayed when a meter Size/Type Code has been selected.

**Minimum Capacity** - Specifies the minimum flow capacity of the meter. This item is only displayed when a meter Size/Type Code has been selected.

**Pressure Rating** - Specifies the pressure rating of the meter. This item is only displayed when a meter Size/Type Code has been selected.



**Size/Type Code** - Specifies the Size/Type Code for the meter (if any) installed at the station.

### Notes & Considerations

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- The meter Size/Type Code may be entered by typing or selecting from the list of existing values. When a new type is entered by typing, it is added to the list of existing values and can then be selected if it is used with another station.
- The pressure recorder make and type value may be entered by typing or selecting from the list of existing values. When a new type is entered by typing, it is added to the list of existing values and can then be selected if it is used with another station.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Compliance Tab - Run/Stage Tab

General	Run 1 Stage 1	Compliance	Inspection	Images																								
<b>Capacity...</b> Regulator (Failed): <input type="text" value="29.978 Mcfh"/> Relief Valve: <input type="text" value="157.522 Mcfh"/>																												
<b>Pressure...</b> <table border="1"> <thead> <tr> <th></th> <th>MAOP</th> <th>Allowable Build-Up Pressure</th> <th>Maximum Calculated Pressure</th> <th></th> <th>Percent Of MAOP</th> </tr> </thead> <tbody> <tr> <td>Upstream Piping:</td> <td><input type="text" value="100.00"/></td> <td><input type="text" value="100.00"/></td> <td><input type="text" value="100.00"/></td> <td>Psi</td> <td><input type="text" value="100.00"/></td> </tr> <tr> <td>Intermediate Piping:</td> <td><input type="text" value="100.00"/></td> <td><input type="text" value="110.00"/></td> <td><input type="text" value="40.10"/></td> <td>Psi</td> <td><input type="text" value="40.10"/></td> </tr> <tr> <td>Downstream Piping:</td> <td><input type="text" value="66.00"/></td> <td><input type="text" value="72.60"/></td> <td><input type="text" value="40.00"/></td> <td>Psi</td> <td><input type="text" value="60.61"/></td> </tr> </tbody> </table>						MAOP	Allowable Build-Up Pressure	Maximum Calculated Pressure		Percent Of MAOP	Upstream Piping:	<input type="text" value="100.00"/>	<input type="text" value="100.00"/>	<input type="text" value="100.00"/>	Psi	<input type="text" value="100.00"/>	Intermediate Piping:	<input type="text" value="100.00"/>	<input type="text" value="110.00"/>	<input type="text" value="40.10"/>	Psi	<input type="text" value="40.10"/>	Downstream Piping:	<input type="text" value="66.00"/>	<input type="text" value="72.60"/>	<input type="text" value="40.00"/>	Psi	<input type="text" value="60.61"/>
	MAOP	Allowable Build-Up Pressure	Maximum Calculated Pressure		Percent Of MAOP																							
Upstream Piping:	<input type="text" value="100.00"/>	<input type="text" value="100.00"/>	<input type="text" value="100.00"/>	Psi	<input type="text" value="100.00"/>																							
Intermediate Piping:	<input type="text" value="100.00"/>	<input type="text" value="110.00"/>	<input type="text" value="40.10"/>	Psi	<input type="text" value="40.10"/>																							
Downstream Piping:	<input type="text" value="66.00"/>	<input type="text" value="72.60"/>	<input type="text" value="40.00"/>	Psi	<input type="text" value="60.61"/>																							
<b>Calculation Message:</b> <div>             Normal: Passed              Failed: Passed              Compliance: Passed           </div> <div>             Reviewed By: <input type="text"/>              Review Date: <input type="text" value="12/30/1899"/> </div>																												
<div> <input type="button" value="Back"/> <input type="button" value="Next"/> </div>																												

Run 1 Stage 1

### Data Items

**Override Failed Conditions - See Notes** - When selected, the status of a failed station will be ignored or “overridden” by the User. This item is only displayed when at least one stage of a station has failed.

**Review Date** - Specifies the date when the station data and calculation results were reviewed. Enter a value using the following format - MM/DD/YYYY.

**Reviewed By** - Specifies who reviewed the station data and calculation results.

### Calculated Items

**Allowable Build-Up Pressure** - Displays the maximum allowable build-up pressure during failed conditions for the associated piping section.

**Calculation Message** - Displays the status of the calculation results.



### Capacity -

**At Maximum Inlet** - Displays the maximum capacity of the station when the supply pressure is set to the minimum entered inlet pressure. This item is only displayed when the station is a monitor-style configuration.

**At Minimum Inlet** - Displays the maximum capacity of the station when the supply pressure is set to the minimum entered inlet pressure. This item is only displayed when the station is a monitor-style configuration.

**Regulator (Failed)** - Displays the maximum capacity of the regulator during failed conditions.

**Regulator (Normal)** - Displays the maximum capacity of the regulator during normal conditions.

**Relief Valve** - Displays the maximum calculated relief valve capacity.

**Required** - Displays the required relief capacity for relief valve-only stages.

**MAOP** - Displays the Maximum Allowable Operating Pressure during normal operating conditions for the associated piping section.

**Maximum Calculated Pressure** - Displays the maximum calculated pressure during failed or normal conditions for the associated piping section.

**Percent Of MAOP** - Displays the ratio of the maximum calculated pressure to the MAOP in percentage units.

### Notes & Considerations

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- If the *Override Failed Conditions - See Notes* option is selected for a failed station, it is suggested that a comment explaining the justification for the override action be added to the *Comments/Notes* section for the station.
- See the *Calculation Method* topic in the *Appendix* section for information on how the regulator and relief valve capacities are calculated.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.



### Inspection Tab

General	Run 1 Stage 1	Compliance	Inspection	Images																		
<p>For Year: <input type="text" value="2014"/></p> <p>Previous Inspection Date: <input type="text" value="07/05/2004"/></p> <p>Required Inspection Date: <input type="text" value="10/04/2005"/></p> <p>Inspection Status: <span style="background-color: yellow;">Calendar Year Error</span></p> <hr/> <p>Inspection Notes:</p> <div style="border: 1px solid black; padding: 2px;"> <p>Inspected Upon Completion Of Construction</p> </div> <p>Inspected By: <input type="text" value="Joe Inspector"/></p> <p>Inspection Date: <input type="text"/></p>		<p>Inspection Results...</p> <table border="1"> <thead> <tr> <th>Findings/Actions:</th> <th></th> </tr> </thead> <tbody> <tr><td>Enclosures OK</td><td>N/A</td></tr> <tr><td>Paint OK</td><td>N/A</td></tr> <tr><td>Site Protection OK</td><td>N/A</td></tr> <tr><td>Signs OK</td><td></td></tr> <tr><td>Vents OK</td><td>Yes</td></tr> <tr><td>Strainers OK</td><td>Yes</td></tr> <tr><td>Valves OK</td><td>Yes</td></tr> <tr><td>Locks OK</td><td>Yes</td></tr> </tbody> </table> <p>Required Actions: <input type="text" value="Confirm Pressure Test"/></p> <p>Completed By: <input type="text" value="Joe Inspector"/> Date: <input type="text"/></p>			Findings/Actions:		Enclosures OK	N/A	Paint OK	N/A	Site Protection OK	N/A	Signs OK		Vents OK	Yes	Strainers OK	Yes	Valves OK	Yes	Locks OK	Yes
Findings/Actions:																						
Enclosures OK	N/A																					
Paint OK	N/A																					
Site Protection OK	N/A																					
Signs OK																						
Vents OK	Yes																					
Strainers OK	Yes																					
Valves OK	Yes																					
Locks OK	Yes																					
<p>&lt;Back</p>		<p>Next&gt;</p>																				

### Data Items

**Completed By** - Specifies who performed the required corrective actions.

**Date** - Specifies the date when any required actions were completed. Enter a value using the following format - MM/DD/YYYY.

#### *Findings/Actions* -

**Data Recorders OK** - Specifies the status of the condition of any installed pressure recorders at the station.

**Enclosures OK** - Specifies the status of the condition of any enclosure, housing, or vault installed at the station.

**Locks OK** - Specifies the status of the condition and presence of any security locks installed at the station.

**OPP Capacity Field Verified** - Specifies the flow capacity of the Over Pressure Protection (OPP) device was field verified or tested.

**OPP Devices Lock-Up OK** - Specifies the Over Pressure Protection (OPP) device passed the “lock-up” (shut off) test.

**OPP Devices Operated** - Specifies the Over Pressure Protection (OPP) device was operated during the field inspection.

**OPP Internals Inspected** - Specifies the Over Pressure Protection (OPP) device was dismantled, and the condition of its internal components was inspected.

**Paint OK** - Specifies the status of the condition of the paint or atmospheric corrosion protection for the station.

**Regulator Internals Inspected** - Specifies the regulator device was dismantled, and the condition of its internal components was inspected.

**Regulators Lock-Up OK** - Specifies the regulator device passed the “lock-up” (shut off) test.

**Regulators Operated** - Specifies the regulator device was operated during the field inspection.

**Signs OK** - Specifies the status of the condition of the warning signs and posted notices for the station.

**Site Protection OK** - Specifies the status of the condition of the site protection for the station - for example, fencing, bollards, or livestock guards.

**Strainers OK** - Specifies the status of the condition of any strainers or filters installed at the station.

**Valves OK** - Specifies the status of the condition of the valves for the station.

**Vents OK** - Specifies the condition of the device and enclosure vents for the station.

**For Year** - Specifies the calendar year that the inspection is associated with.

**Inspected By** - Specifies who performed the field inspection.

**Inspection Date** - Specifies the date when the field inspection was performed. Enter a value using the following format - MM/DD/YYYY.

**Inspection Notes** - Displays any notes and comments associated with the inspection.

**Previous Inspection Date** - Specifies the date of the most previous field inspection. Enter a value using the following format - MM/DD/YYYY.

**Required Actions** - Displays any corrective actions that must be taken to bring the station into compliance.



### Calculated Items

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**Inspection Status** - Displays the status of the latest field inspection results for the specified year.

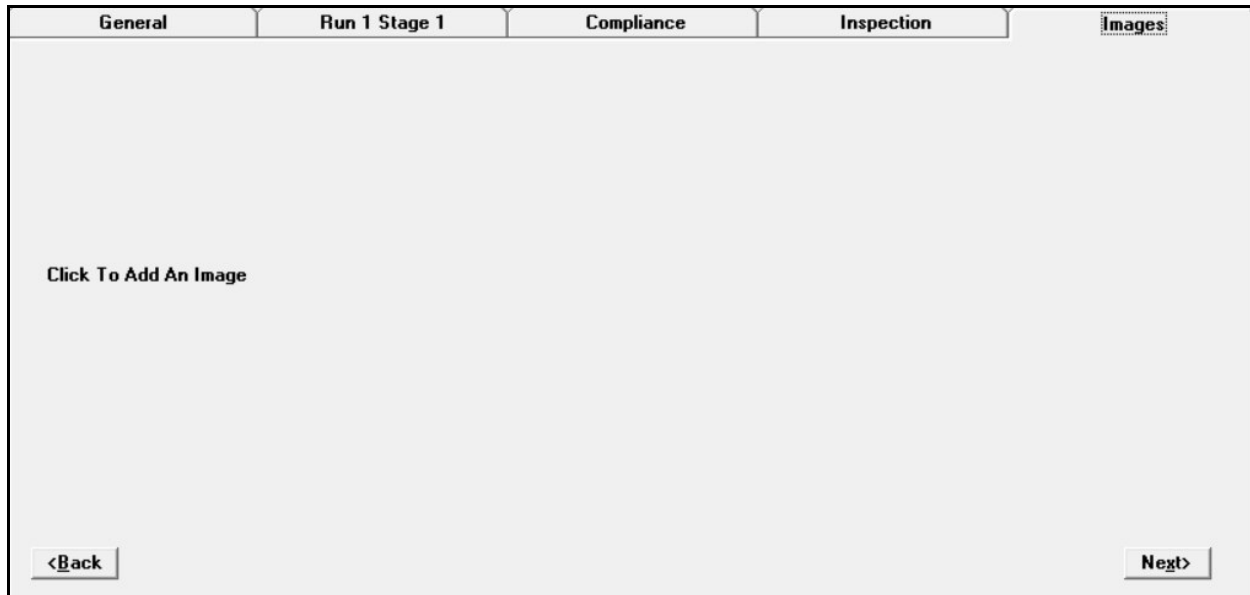
**Required Inspection Date** - Displays the date for the next required field inspection.

### Notes & Considerations

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- If an item does not apply to the station, select “N/A” (Not Applicable) for the inspection result.
- If an item has “passed” inspection, select “Yes” for the inspection result.
- If an item does not pass inspection or was not inspected, leave the result empty.
- Each item must have a “Yes” or “N/A” entry to “pass” inspection for the current inspection year.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Images Tab



### Displayed Items

**Click To Add An Image** - When selected, the Image Specifications screen is displayed to assign a new or additional image to the station.

**Image** - If an image is displayed, click the image to open the Image Specifications screen to change, view, edit, or unassign the image.

### Notes & Considerations

- See the *Image Specifications* topic in the *Data Screens* section for more information about working with images.

### Command Buttons

**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Calculate** - Calculates the associated values.



**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves the current data values.

**First** - Displays the first station record in the current report.

**Last** - Displays the last station record in the current report.

**Middle** - Displays the station in the middle of the current report.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

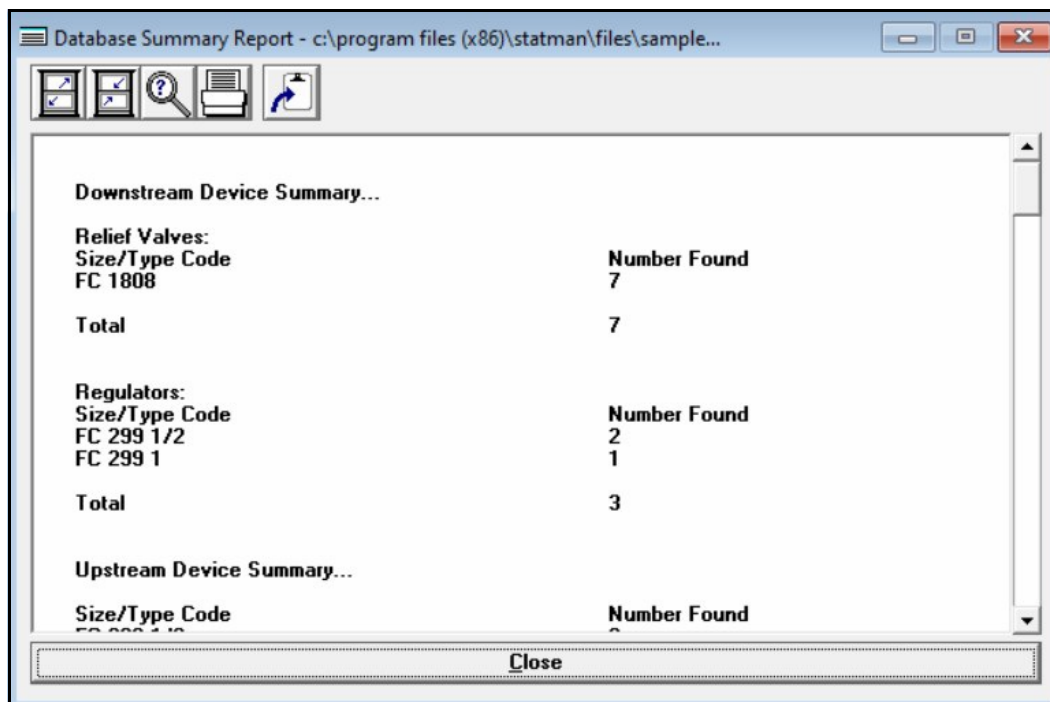
**Next Station** - Displays the next station in the current report.

**Previous Station** - Displays the previous station in the current report.

**Print** - Prints the contents of the report. When clicked, the Print Settings screen is displayed.

### Database Summary Report

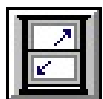
The Database Summary Report is accessed by selecting the *Database Summary* item from the *Report* menu. The Database Summary routine may display any or all of the following summaries - Downstream Device, Fitting, Pipe, or Upstream Device. The report lists the various selected devices associated with the current record. The features associated with the report are described as follows.



### Icons



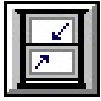
**Copy To Clipboard** - Copies the contents of the Database Summary Report to the Windows Clipboard. Once copied, the contents may be pasted into another application.



**Maximize Screen Size** - Increases the report's size to fill the StationManager display.



**Print** - Prints the contents of the report. When clicked, the Print Settings screen is displayed.



**Reset Screen Size** - Sets the report's size to its "normal" dimensions and position.

### **Command Buttons**

---

**Close** - Closes the report.

### **Notes & Considerations**

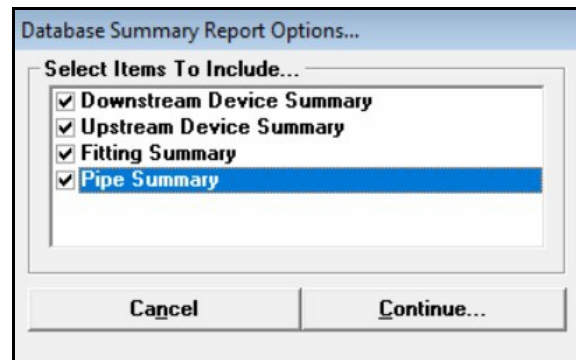
---

- The Database Summary Report is created each time the associated menu item is selected. The report is not saved. The contents of the report may change each time the report is generated, depending on changes that have been made to the database since the last report generation.

### Database Summary Report Options

---

The Database Summary Report includes several specialized report options. The User may indicate which sections they wish to include in the Database Summary Report. The Database Summary Report Options screen is accessed by selecting the *Database Summary* item from the *Report* menu. The features associated with the screen are described as follows.



#### Data Items

---

**Downstream Summary** - When selected, the downstream device data will be included in the Database Summary Report.

**Fitting Summary** - When selected, the fitting data will be included in the Database Summary Report.

**Pipe Summary** - When selected, the pipe data will be included in the Database Summary Report.

**Upstream Device Summary** - When selected, the upstream device data will be included in the Database Summary Report.

#### Command Buttons

---

**Cancel** - Closes the screen without creating the Database Summary Report.

**Continue** - Proceeds with the Database Summary Report routine.



### Default Data Values

When a new station is created, some items are initially assigned default values. These values are set using the Default Data Values screen. The screen is accessed by selecting the *Set Default Values* item from the *Utilities* menu. The features associated with the screen are described as follows.

### Hydraulic Data Tab

The screenshot shows the 'Default Data Values...' dialog box with the 'Hydraulic Data' tab selected. The dialog has three tabs: 'Hydraulic Data', 'Base/Gas Properties', and 'Dimensional Units'. The 'Hydraulic Data' tab contains the following fields and values:

- Default Data Values...** (Section Header)
- Pipe Flow Equation:** IGT-Improved (dropdown menu)
- Pipe Efficiency:** 95 (text box) Percent (unit label)
- Pipe Components...** (Section Header)
  - Upstream:** P: 2S-STD - Len: 10.0 (text box)
  - Intermediate:** P: 2S-STD - Len: 1.0 (text box)
  - Downstream:** P: 2S-STD - Len: 10.0 (text box)
  - Stack:** P: 2S-STD - Len: 5.0 (text box)
- Station Inlet Pressure - Min:** 0 (text box) **Max:** 500 (text box) Psi (unit label)
- Required Flow - Min:** 0 (text box) **Max:** 10 (text box) Mcfh (unit label)
- Station Elevation:** 0 (text box) ft (unit label)
- Flowing Temperature:** 60 (text box) F (unit label)
- Inspection For Year:** 2003 (text box)

At the bottom of the dialog, there are four buttons: 'Apply Hydraulic Data Values Only', 'Apply All Values', 'Cancel', and 'Close'.

### Data Items

**Flowing Temperature** - Specifies the default flowing temperature of the gas to use during the hydraulic calculations.

**Inspection For Year** - Specifies the default calendar year to use for calculating the inspection status.

### *Pipe Components -*

**Downstream** - Displays the Piping Components screen to specify the default downstream pipe Size/Type Code and length.

**Intermediate** - Displays the Piping Components screen to specify the default intermediate pipe Size/Type Code and length.

**Stack** - Displays the Piping Components screen to specify the default stack pipe Size/Type Code and length.

**Upstream** - Displays the Piping Components screen to specify the default upstream pipe Size/Type Code and length.

**Pipe Efficiency** - Specifies the default pipe efficiency (hydraulic efficiency) value to use during the hydraulic calculations.

**Pipe Flow Equation** - Specifies the default pipe flow equation to use during the hydraulic calculations.

**Required Flow Minimum/Maximum** - Specifies the default maximum and minimum required flow values.

**Station Elevation** - Specifies the default elevation above mean sea level of the station location.

**Station Inlet Pressure Minimum/Maximum** - Specifies the default maximum and minimum inlet pressure values.

### Base/Gas Properties Tab

Default Data Values...

**Hydraulic Data**    **Base/Gas Properties**    **Dimensional Units**

**Base Conditions...**

Pressure: 14.73 Psi (Abs)

Temperature: 60 F

**Default Gas Property Values...**

Viscosity: 0.000007 Lbm/Ft-sec

Specific Gravity: 0.6

Specific Heat Ratio: 1.3

Apply Gas Property Values Only    Apply All Values

Cancel    Close

### Data Items

**Pressure** - Specifies the default pressure to be used to calculate a “standard” volume of gas.

**Specific Gravity** - Specifies the default specific gravity value for the gas composition.

**Specific Heat Ratio** - Specifies the default specific heat ratio value (ratio of the specific heat at constant volume to the specific heat at constant pressure) for the gas composition.

**Temperature** - Specifies the default temperature to be used to calculate a “standard” volume of gas.

**Viscosity** - Specifies the default absolute or dynamic viscosity for the gas composition.

### Dimensional Units Tab

Default Data Values...

Hydraulic Data   Base/Gas Properties   **Dimensional Units**

Default Dimensional Units...

Coordinates: Degrees L/L

Diameter: Inches

Efficiency: Percent

Elevation: ft

Flow Rate: Mcfh

Length: ft

Pressure (Abs): Psi (Abs)

Pressure (Gauge): Psi

Temperature: F

Velocity: Feet/sec

Viscosity: Lbm/Ft-sec

Apply Dimensional Units Only   Apply All Values

Cancel   Close

### Data Items

**Coordinates** - Specifies the dimensional units to use for the coordinate values.

**Diameter** - Specifies the dimensional units to use for the diameter values.

**Efficiency** - Specifies the dimensional units to use for the pipe flow efficiency values.

**Elevation** - Specifies the dimensional units to use for the elevation values.

**Flow Rate** - Specifies the dimensional units to use for the flow, rate, and capacity values.

**Length** - Specifies the dimensional units to use for the length values.

**Pressure (Abs)** - Specifies the dimensional units to use for the absolute pressure values.

**Pressure (Gauge)** - Specifies the default dimensional units to use for the gauge pressure values.

**Temperature** - Specifies the dimensional units to use for the temperature values.

**Velocity** - Specifies the dimensional units to use for the velocity values.

**Viscosity** - Specifies the dimensional units to use for the viscosity values.

### Command Buttons

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**Apply...Only** - Applies the default data values associated with the currently displayed data tab to all of the records in the currently open database. This routine is useful when only a specific set of the default data values needs to be changed (for example, to reset the dimensional units).

**Apply All Values** - Applies all of the default data values and settings to all of the records in the currently open database. This routine is useful when a new database is created using the wrong default data values and settings.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

### Notes & Considerations

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- The *Close* command button saves the data but does not apply the changes to the current database. The new values are only assigned to new records that are added to the database.
- Use care when clicking the *Apply Dimensional Units Only* command button - the command applies *all* of the default dimensional units to all of the database records. If you have made changes or entries to the database, your changes may be overwritten with the default values.
- Use care when clicking the *Apply Gas Property Values Only* command button - the command applies *all* of the default gas property data values to all of the database records. If you have made changes or entries to the database, your changes may be overwritten with the default values.
- Use care when clicking the *Apply Hydraulic Data Values Only* command button - the command applies all of the default hydraulic data values to all of the database records. If you have made changes or entries to the database, your changes may be overwritten with the default values.



- Use care when clicking the *Apply All Values* command button - the command applies *all* of the default data values to all of the database records. If you have made changes or entries to the database, your changes may be overwritten with the default values.
- When the data field for a pipe component item is clicked, the Piping Components screen is displayed. See the *Piping Components* topic in the *Data Screens* section for information on its use.
- With the exception of the gauge pressure units, the dimensional units are applied to and used by all the values for all the records in the current database.
- Multiple components can be assigned to the default values, or the default component list can be left empty. Select the *Allow Empty Component List* calculation option if you want to allow empty component lists to be allowed during the calculation process.

### Device Selection

The Device Selection screen can be used to determine the Size/Type Code for a regulator or relief valve to be used in the associated station. To select a Size/Type Code, click the *Size/Type Code* command button from the associated device screen. If the Size/Type Code is known, use the *Full List* data tab to select the desired Size/Type Code. If the Size/Type Code is not known, use the *Manufacturer/Model* data tab to generate the associated Size/Type Code for the desired device. The features associated with the screen are described as follows.

### Manufacturer/Model Tab

The screenshot shows a dialog box titled "Device Selection...". It has two tabs: "Manufacturer/Model" (selected) and "Full List". The "Manufacturer/Model" tab contains five input fields, each with a dropdown arrow:

- Manufacturer:** Fisher Controls
- Model:** 299
- Body Size:** 1-1/2
- Orifice Size:** 1/2
- Size/Type Code:** FC 299 1/2

At the bottom of the dialog box are two buttons: "Cancel" and "Apply".

### Data Items

**Body Size** - Specifies the body size associated with the desired device.

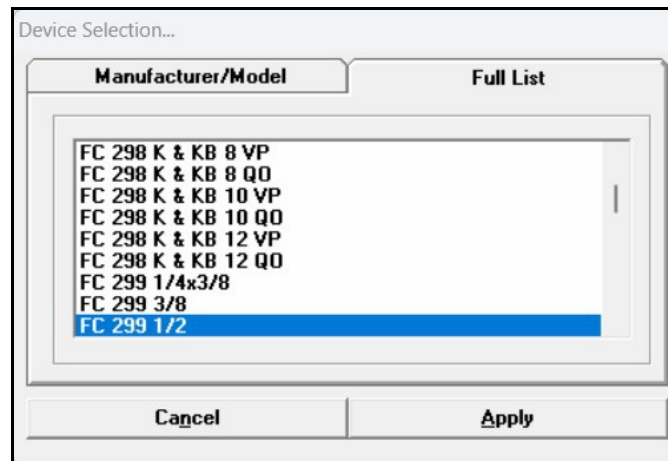
**Manufacturer** - Specifies the manufacturer's name associated with the desired device.

**Model** - Specifies the model name or number associated with the desired device.

**Orifice Size** - Specifies the orifice size associated with the desired device.

**Size/Type Code** - Specifies the Size/Type Code of the defined device.

### Full List Tab



### Data Items

**Full List** - Displays all the available Size/Type Codes in the current Regulator or Relief Valve Property Table.

### Command Buttons

**i** - Displays information about the associated item. The contents of the information screen generally reflect the various data values contained in the associated Property Table.

**Apply** - Closes the screen and applies the selected Size/Type Code.

**Cancel** - Closes the screen without applying the Size/Type Code.

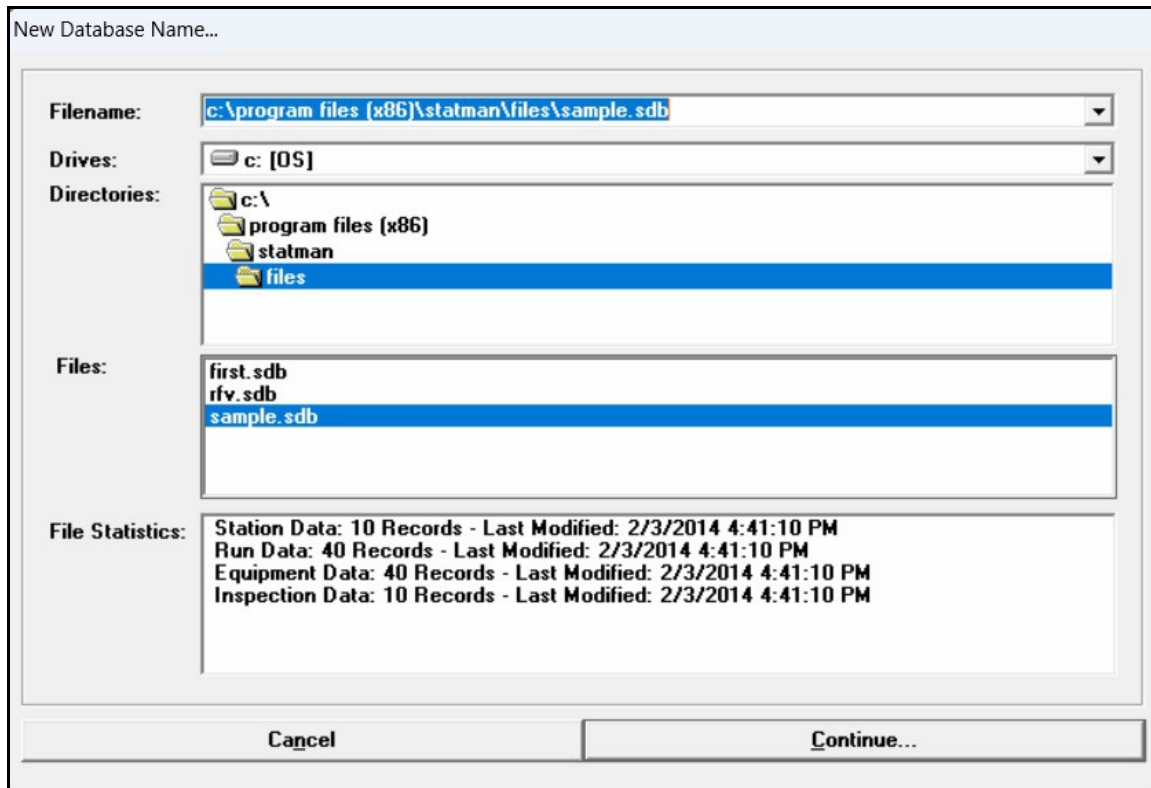
### Notes & Considerations

- All values shown in the data lists are taken from the associated Property Tables.
- To select a device using the *Manufacturer/Model* data tab, first select the *Manufacturer*, then the *Model*, *Body Size*, and *Orifice Size*. The available device Size/Type Codes corresponding to the selected values will be displayed in the *Size/Type Code* list. Select the desired Size/Type Code from the list.



### File Selection

The File Selection screen is displayed when the User selects a command or routine that needs to open or access an existing database. For example, selecting the *Open* item from the *File* menu will cause the screen to be displayed. The features associated with the screen are described as follows.



### Displayed Items

**File Statistics** - Displays the various information about the currently selected (highlighted) file. The contents of the display will vary depending on the version of the selected file.

### Data Items

**Directories** - Specifies the directory (folder) to use on the selected disk drive. When a directory has been selected, any files contained in that directory will be displayed in the *Files* list.

**Drives** - Specifies the disk drive to use. When a drive is selected, the directories contained on that drive will be displayed in the *Directories* list.

**Filename** - Specifies the name of the file to be used. A list of the most previously used files may be accessed from the drop-down list. The Filename may be entered by various means. If the Filename is manually entered, include the path.

**Files** - Specifies the files found in the selected directory on the selected disk drive.

### Command Buttons

---

**Cancel** - Closes the screen without selecting a file.

**Continue** - Proceeds with the routine.

### Notes & Considerations

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- When manually entering a database name, remember to include the “.sdb” file extension.

### Find

---

The Find routine is used by the Property Table Report. It allows records to be located by searching for a specified data value. The search criteria are entered using the Find specification screen. The Find specification screen is accessed by clicking the *Find Record* icon from the Property Table Report. The features associated with the screen are described as follows.



### Data Items

---

**Value** - Specifies the Size/Type Code to search for.

### Command Buttons

---

**Cancel** - Closes the screen without performing the search.

**Find Next** - If enabled, searches for another occurrence of the most previously specified search value.

**Search** - Initiates the search.

### Notes & Considerations

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- When executed the first time, searching begins from the start of the file or current selection set for a record matching the search criteria. If a match is found, the matching record is made current. To find other occurrences, re-execute the Find Record routine and click the *Find Next* command button. If no match is found, a message will be displayed.
- When the *Find Next* command button is clicked, the search begins at the last matching record and then searches to the end of the file or selection set. If no match is found, the search begins again at the beginning of the file or selection set and continues until a match is found or the entire file or selection set has been searched.

### Find Specifications

---

The Station Data Report allows station records to be located by searching for a specified data value. The search criteria are entered using the Find Specifications screen. The screen is accessed by clicking the *Find Record* icon from the Station Data Report. The features associated with the screen are described as follows.



Find Specifications...

Item: District

Value:

Cancel Find Next Search

### Data Items

---

**Item** - Specifies which data item is to be searched.

**Value** - Specifies the value to search for.

### Command Buttons

---

**Cancel** - Closes the screen without performing the routine.

**Find Next** - If enabled, searches for another occurrence of the most previously specified search value.

**Search** - Initiates the search.

### Notes & Considerations

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- When a search is performed with a data item that contains an alphanumeric string value (for example, a search using the “District” data item), a match is found only when all characters match the specified search value.
- When the *Search* command button is clicked, the search begins at the first record in the database and proceeds through the station records until a match is found or the last record is encountered.

- When the *Find Next* command button is clicked, the search begins at the currently selected record and proceeds through the station records until a match is found or the last record is encountered. When the last record is encountered, the search starts again at the first record at the beginning of the database.

### Go To Record

---

The Station Data Report allows a station record to be found by its record number. The record number that is to be found is entered using the Go To Record screen. The Go To Record screen is accessed by clicking the *Go To Record* icon from the Station Data Report. The features associated with the screen are described as follows.



Go To Record...

Record Number:

Cancel Continue...

#### Data Items

---

**Record Number** - Specifies the number of the record to display at the top of the associated report.

#### Command Buttons

---

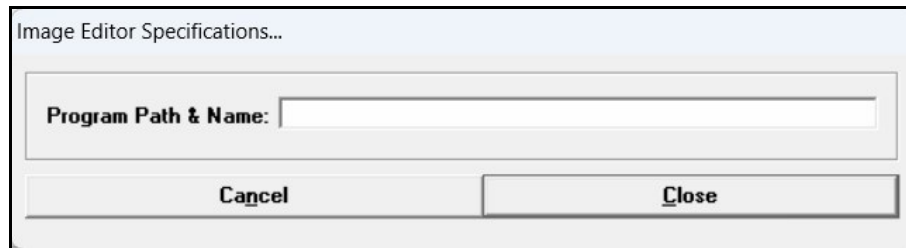
**Cancel** - Closes the screen without proceeding with the Go To Record routine.

**Continue** - Proceeds with the Go To Record routine.

### Image Editor Specifications

---

StationManager allows the User to set the image editor used to edit or view images attached to a database. To specify which editor to use, select the *Set Image Editor* item from the *Preferences* submenu of the *File* menu. The features associated with the screen are described as follows.

The screenshot shows a dialog box titled "Image Editor Specifications...". Inside the dialog, there is a label "Program Path & Name:" followed by a text input field. At the bottom of the dialog, there are two buttons: "Cancel" and "Close".

#### Data Items

---

**Program Path & Name** - Specifies the Program Path & Name for the Image Editor to be used with StationManager if different than the default program.

#### Command Buttons

---

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

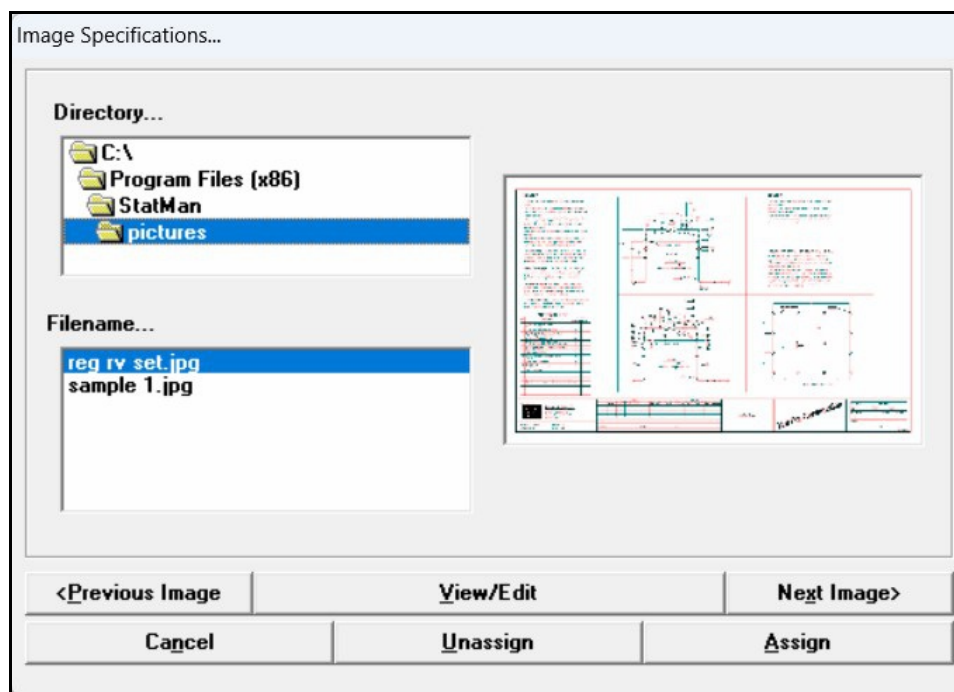
#### Notes & Considerations

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- If the *Program Path & Name* value is empty, the default system editor/viewer will be used. If a value is entered, the full path and application executable filename and extension must be entered.

### Image Specifications

StationManager allows one or more images to be attached to a station data record. The images are viewed and managed using the Image Specifications screen. The screen can be used to add an image, view or edit an image, or unassign an image. The screen is accessed by clicking on an existing image or by clicking on the “Add Image” label on the *Images* data tab of the General Station Data screen associated with the Schematic Data Interface or on the *Images* data tab associated with the station record Data Entry Form. The features associated with the screen are described as follows.



### Data Items

**Directory** - Specifies the directory (folder) to use on the selected disk drive. When a directory has been selected, any files matching the specified extension or search pattern will be displayed in the *Files* panel.

**Filename** - Specifies the matching files found in the selected directory on the selected disk drive.

### Command Buttons

**Assign** - Assigns an image or changes an image assigned to the current station.

**Cancel** - Closes the screen without saving changes.



**Next Image** - Displays the next image assigned in the current station.

**Previous Station** - Displays the previously assigned image in the current station.

**Unassign** - Removes an image that has been previously assigned to the current station.

**View/Edit** - Opens the image in the assigned image editor/viewer. See the following *Notes & Considerations* section for more information.

### Notes & Considerations

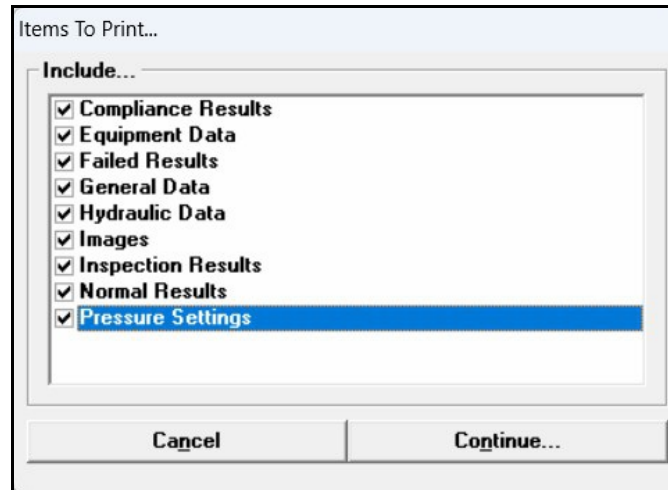
---

- The image editor/viewer that is used when the *View/Edit* command button is clicked is assigned using the *Set Image Editor* item in the *Preferences* submenu of the *File* menu.
- StationManager supports images stored in files saved as Windows Bitmap (.bmp), JPEG compressed (.jpg), Graphic Interchange Format (.gif), or Windows Meta File (.wmf) format. Images can be “pictures,” drawings, or other digital data stored in one of the supported formats.
- The data associated with the attached image is not actually stored in the database. Only the name and location of the file associated with the image are stored in the database. When moving a database from one machine to another, remember to also move the image files to the new machine. The *Bundle* and *Unbundle* routines are useful when moving database files from one machine to another. See the *Bundle* topic in the *Menu Items* section for more information on these routines.

### Items To Print

---

By clicking the *Print* command button from the Data Entry Form, the User can specify which items to print. The features associated with the screen are described as follows.



### Command Buttons

---

**Cancel** - Closes the screen without saving changes.

**Continue** - Proceeds with the Print routine.

### Mass Update Specifications

Mass changes may be made to the station data using the Mass Update routine. This type of change is referred to as a “mass update.” The Mass Update routine is controlled using the Mass Update Specifications screen. The screen is accessed by selecting the *Mass Update* item from the *Edit* menu or by clicking the *Perform Mass Update* icon from the Station Data Report. The features associated with the screen are described as follows.



### Data Items

**Equal To** - Specifies the new value for the specified *Set* item. The characteristics and contents of this item will change depending on the selected *Set* item.

**Is** - Specifies the search operator to be used during the Mass Update. The search operator specifies the relation between the *Where* and *Value* items, except in the case of the “All” operator. When the “All” operator is selected, the values of the *Where* and *Value* fields are ignored - in this case, all data features associated with the specified *Where* item are selected.

**Set** - Specifies the data item to be updated.

**Where** - Specifies which data item is to be used as the search item during the query selection.

**Value** - Specifies the check value to be used during the query selection. The characteristics and contents of this item will change depending on the selected *Where* item.

### Command Buttons

**Close** - Closes the screen and saves changes.

**Restore** - Restores the data values that existed just prior to the executed update.



**Update** - Performs the Mass Update using the User-specified settings and data values.

### Notes & Considerations

- The meanings of the search operators are:

<i>Operator</i>	<i>Description</i>	<i>Applies To</i>
= (Equal To)	Finds all records with a <i>Where</i> item is equal to the <i>Value</i> item.	Numeric & String values
<> (Not Equal To)	Finds all records with a <i>Where</i> item is not equal to the <i>Value</i> item.	Numeric & String values
< (Less Than)	Finds all records with a <i>Where</i> item is less than the <i>Value</i> item.	Numeric values only
> (Greater Than)	Finds all records with a <i>Where</i> item is greater than the <i>Value</i> item.	Numeric values only
<= (Less Than Or Equal To)	Finds all records with a <i>Where</i> item is less than or equal to the <i>Value</i> item.	Numeric values only
>= (Greater Than Or Equal To)	Finds all records with a <i>Where</i> item is greater than or equal to the <i>Value</i> item.	Numeric values only
All	Finds all records associated with the specified <i>Where</i> item.	Any
Ends With	Finds all records that end with the specified <i>Value</i> item.	String values only
Like	records with a <i>Where</i> item that contains the specified <i>Value</i> item.	String values only
Maximum	Finds a specified number of records which possess the highest <i>Value</i> items.	Numeric values only
Minimum	Finds a specified number of records which possess the lowest <i>Value</i> items.	Numeric values only
Not Like	Finds all records that do not contain the specified <i>Value</i> item.	String values only

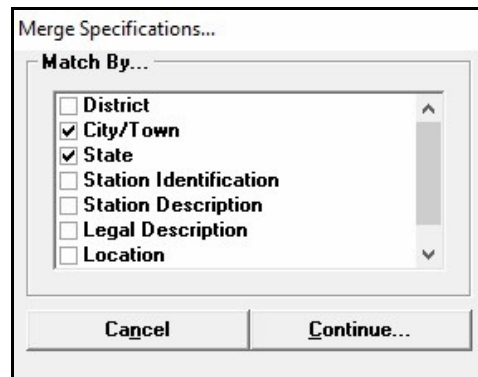
<i>Operator</i>	<i>Description</i>	<i>Applies To</i>
Starts With	Finds all records that start with the specified <i>Value</i> item.	String values only

- When the “All” option is used and a previous selection set has been created, the specified changes will only apply to the records in the selection set.

### Merge Specifications

---

StationManager allows the User to merge data from another database into the currently open database. For some file formats, the merge routine attempts to find matches between the new database and the current database by way of certain station data. The matching process is controlled by settings in the Merge Specifications screen. The features associated with the screen are described as follows.



### Data Items

---

**Match By** - When selected, the associated data items will be used to match station records between the two databases.

### Command Buttons

---

**Cancel** - Closes the screen without proceeding with the routine.

**Continue** - Proceeds with the Merge routine.

### Notes & Considerations

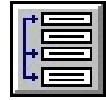
---

- The Merge routine allows data values and records from a source database to be merged into a target database. The target database represents the currently open database - the database being merged into. The source database represents the database that data is being read from - the database being merged from. When the Merge routine is executed, the merge process reads through the station records in the source database and attempts to find a matching record in the target database. A match is made when the values for the specified “match by” items are the same for a station in both the source and target databases. If a match is found, the data from the target database is replaced with the data from the source database for the matching record. If no match is found, the record from the source database is added to the end of the target database.

- If multiple station records exist in the source database with identical “Match By” item values, the matching record values in the target database will be replaced with the values from the last duplicate record in the source database.
- If multiple station records exist in the target database with identical “Match By” item values, only the first matching record in the target database will be updated with the values from the matching record in the source database.

### Merge Station Specifications

StationManager provides a routine that allows two station records to be merged into one record. The routine is controlled using the Merge Station Specifications screen. The screen is accessed by clicking the *Merge Two Stations* icon from the Station Data Report. The features associated with the screen are described as follows.



Merge Station Specifications...

Record Number Of Base Station (Station To Be Merged To): 1

Record Number Of Station To Merge With The Base Station: 1

Cancel Continue...

#### Data Items

**Record Number Of Base Station (Station To Be Merged To)** - Specifies the record number of the station that will receive the merged information.

**Record Number Of Station To Merge With The Base Station** - Specifies the record number of the station that will be merged with the base station.

#### Command Buttons

**Cancel** - Closes the screen without performing the routine.

**Continue** - Proceeds with the Merge Station routine.

#### Notes & Considerations

- The Merge routine adds the run records from the merge station to the station data of the base station. Other data (for example, general and inspection data) from the merge station is ignored.
- The base and merge stations can only contain one run each and must contain the same number of stages.
- If the base and merge station numbers are the same, the routine is not performed.

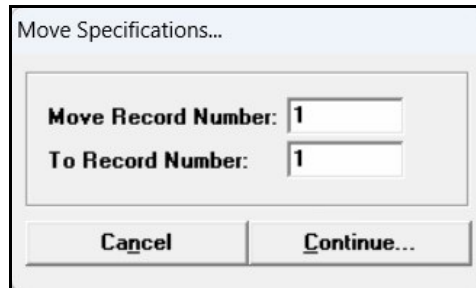
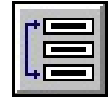


- The merge station record is combined with the base station record. That is, the merge data is added to the base data, and the merge station record is deleted from the Station Data Report.
- The results of the Merge routine cannot be directly or completely undone. The results of the Merge routine can be partially restored by creating a copy of the combined station (insert or add a copy of the station to the Station Data Report). Delete the merged run to recreate the original base station from the original combined station. Delete the base run from the copy of the combined station to partially recreate the original merge station. The uncombined data (general and inspection data) from the original merge station will not be restored.
- Because the merge (source) station record is being deleted, the number of stations in the database will change, and the station record numbers will change after the merge is complete.

### Move Specifications

---

A record in the Station Data Report can be moved from its current location to another location (record number). The relocation is controlled by the Move Specifications screen. The screen is accessed by clicking the *Move Record* icon from the Station Data Report. The features associated with the screen are described as follows.



### Data Items

---

**Move Record Number** - Specifies the record number of the station that will be moved.

**To Record Number** - Specifies the record number that the station will be moved to.

### Command Buttons

---

**Cancel** - Closes the screen without performing the routine.

**Continue** - Proceeds with the Move routine.

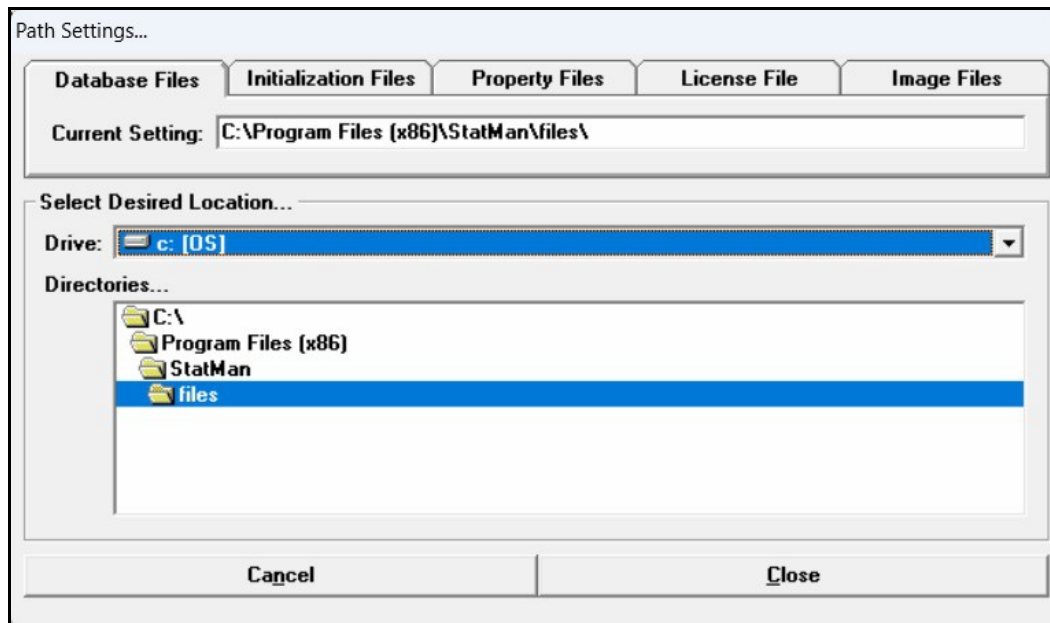
### Notes & Considerations

---

- If the “move” and “to” record numbers are the same, no change is made.
- The number of stations in the database will not be changed by this routine. However, the station record numbers will change after the move is complete.

### Path Settings

The default directory (folder) locations for the various files associated with a StationManager database and the support files are controlled using the Path Settings screen. The Path Settings screen is accessed by selecting the *Paths (File Locations)* item from the *File* menu. The features associated with the screen are described as follows.



### Data Items

**Current Setting** - Displays the current setting for the associated file type. Use the *Drive* and *Directories* items to change the current setting.

**Directories** - Specifies the directories associated with the selected drive. The last open “folder” indicates the selected directory.

**Drive** - Specifies the available disk drives.

### Command Buttons

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

### Notes & Considerations

---

- For Database Files, the location setting specifies the default location to use when opening or saving a database.
- For Initialization Files, the location setting specifies the location to store and retrieve the various temporary and initialization files used by StationManager. Data screen initialization files store data about a screen's size and position. Other files contain temporary data used by various commands and routines.
- For Property Files, the location setting specifies where to find the various Property Tables used by StationManager. The Property Tables contain various information about pipes, fittings, regulators, and relief valves.
- For the License File, the location setting specifies the location of the StationManager license file. Generally, this location should not be changed.
- For Image Files, the location setting specifies the default location for image files assigned/attached to the database. If an assigned image file is not found in the specified location, StationManager will also look in the location where the database is stored. Specifying the correct location speeds up access to the image files when they are needed for display or review.

### Piping Components - Long Form

The Piping Components screen can be accessed by clicking in the associated *Piping Components* data cell from the Station Data Report. The features associated with the screen are described as follows.

### Components Tab

Piping Components...

Components Settings/Results

P: 2S-STD - Len: 10.0

Segment Data...

Size/Type: 2S-STD

Length: 10 ft

ID Number:

Piping Fittings

Enter

Add Insert Delete

<Back Cancel Close Next>

Close & Calculate

### Data Items

**ID Number** - Specifies the identification number or another description of the associated component. The description can contain up to twenty (20) alphanumeric characters. For example, the number may represent a valve number, a pipe section number, the facility number, or similar.

**Length** - Specifies the length of the piping component. This item is only displayed for *Piping* components.

**Piping Components** - Displays the components associated with the selected piping segment. The *Components* list can contain pipes and fittings. Use the command buttons directly below the list to modify the contents. The list must contain at least one component.

**Quantity** - Specifies the number or quantity of the selected fitting component. This item is only displayed for *Fitting* components.

**Size/Type** - Specifies the Size/Type Code of the associated component.

### Command Buttons

---

**Add** - Adds an item to the *Components* list. The new item will be added to the end of the list.

**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

**Close & Calculate** - Closes the screen, saves changes, and calculates the results for the current station. A message will be displayed reporting the results of the calculation.

**Delete** - Deletes an item from the *Components* list. The currently highlighted item will be deleted from the list.

**Enter** - Saves changes to the selected (highlighted) component.

**Insert** - Inserts an item into the *Components* list. The new item will be added to the list immediately before the currently highlighted item.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

### Notes & Considerations

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- To add an item to the end of the *Components* list, enter the associated data in the *Segment Data* or *Fitting Data* section, then click the *Add* command button.

- To edit the data associated with an existing component, select the item in the *Components* list. The data associated with the selected item will be displayed in the *Segment Data* or *Fitting Data* section. Make the desired changes, then click the *Enter* command button to save the changes.
- To insert an item into the *Components* list, select the component in the list to insert the new component before. Enter the associated data in the *Segment Data* or *Fitting Data* section, then click the *Insert* command button.
- To delete an item from the *Components* list, select the component to delete in the list, then click the *Delete* command button.
- The screen title/heading will change depending on the pipe section that was selected to access the screen.
- The *SMYS* value is only used under certain high-pressure/high-stress conditions where certain regulatory codes require that the allowable build-up pressure be based on the *SMYS* value. In these cases, the User must enter an appropriate value for the *SMYS* value. In most cases, the value is ignored and can be left empty.
- When the *Back* or *Next* command buttons are clicked, the data contained on the screen is saved, and the next “logical” data screen or data tab will be displayed.

### Piping Components - Short Form

The Piping Components screen can be accessed by clicking either the *Add* or *Insert* command buttons from various data tabs on the Data Entry Form. The features associated with the screen are described as follows.

### Piping Tab

Piping Components...

**Piping**      **Fittings**

Segment Data...

Diameter: 25-STD

Length: 10.0 Feet

ID Number:

Cancel      Apply

### Data Items

**Diameter** - Specifies the diameter of the piping component.

**ID Number** - Specifies the identification number or another description of the associated piping component. The description can contain up to twenty (20) alphanumeric characters. For example, the number may represent a valve number, a pipe section number, the facility number, or similar.

**Length** - Specifies the length of the piping component.



### Fittings Tab

The screenshot shows a dialog box titled "Piping Components...". It has two tabs: "Piping" and "Fittings", with "Fittings" being the active tab. Below the tabs is a section titled "Available Fittings...". This section contains three input fields: "Size/Type:" with a dropdown menu showing "1/2 TB" and an information icon; "Quantity:" with a dropdown menu showing "1" and the word "Each" to its right; and "ID Number:" with a text input field. At the bottom of the dialog are two buttons: "Cancel" and "Apply".

### Data Items

**ID Number** - Specifies the identification number or another description of the associated fitting component. The description can contain up to twenty (20) alphanumeric characters. For example, the number may represent a valve number, a pipe section number, the facility number, or similar.

**Quantity** - Specifies the number or quantity of the selected fitting component.

**Size/Type** - Specifies the Size/Type Code of the associated component.

### Command Buttons

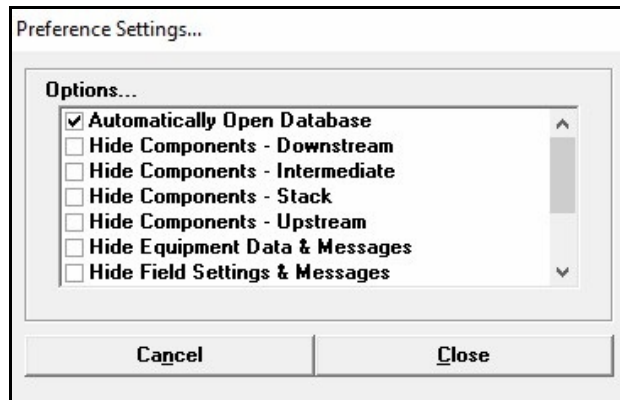
**Apply** - Closes the screen and applies changes.

**Cancel** - Closes the screen without saving changes.

### Preference Settings

---

Various StationManager program behaviors may be set using the Preference Settings screen. The Preference Settings screen is accessed by selecting the *Set Preferences* item from the *Preferences* submenu of the *File* menu. The features associated with the screen are described as follows.



### Data Items

---

**Automatically Open Database** - When selected, on start up, the last database that was active when StationManager was last exited will automatically be opened.

**Display Reminders** - When selected, additional messages will be displayed during certain commands and routines, providing reminders to the User. When not selected, the display of most reminder messages will be suppressed.

**Hide Components - Downstream** - When selected, data items and options associated with the downstream piping components will be hidden (not displayed or printed).

**Hide Components - Intermediate** - When selected, data items and options associated with the intermediate piping components will be hidden (not displayed or printed).

**Hide Components - Stack** - When selected, data items and options associated with the stack piping components will be hidden (not displayed or printed).

**Hide Components - Upstream** - When selected, data items and options associated with the upstream piping components will be hidden (not displayed or printed).

**Hide Equipment Data & Messages** - When selected, data items and options associated with the device equipment data will be hidden (not displayed or printed).

**Hide Field Settings & Messages** - When selected, data items and options associated with the device field settings will be hidden (not displayed or printed).

**Hide Image Data** - When selected, data items and options associated with the station image data will be hidden (not displayed or printed).

**Hide Inspection Data & Messages** - When selected, data items and options associated with the inspection data will be hidden (not displayed or printed).

**Hide Meter Data & Messages** - When selected, data items and options associated with the meter and pressure recorder data will be hidden (not displayed or printed).

**Show Tooltips** - When selected, the tooltips will be displayed when the cursor is rested (hovered) over an icon, menu item, command button, data field, drop-down list, etc. When not selected, the display of tooltip messages will be suppressed.

### Command Buttons

---

**Cancel** - Closes the screen without saving changes.

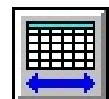
**Close** - Closes the screen and saves changes.

### Notes & Considerations

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- When a group of data items is not used, they can be hidden by selecting the appropriate “hide” option. Using the “hide” options can minimize the clutter in the report and data entry screen. For example, if the equipment data group is not going to be used, select the *Hide Equipment Data & Messages* preference option to prevent data items associated with that group from being displayed. Hiding or unhiding a data group does not affect existing data for those items.

- If changes are made to the hidden/unhidden items, reset the displayed columns in the Station Data Report using the *Restore Columns* icon.



### Print Settings - Long Form

StationManager uses two Print Settings screens - a “long” form and a “short” form. The “Long Form” is displayed when the *Print* icon is clicked from the Station Record Report. The Print Settings screen allows various printer settings to be set by the User. The features associated with the screen are described as follows.



### Displayed Items

**Name** - Displays the name of the font to be used when printing. Double-click in the data field to open the Font settings screen. Select the desired font, then click the *OK* command button.

**Size** - Displays the size of the font to be used when printing. Double-click in the data field to open the Font settings screen. Select the desired size, then click the *OK* command button. The size is expressed in printer points. One printer point is approximately equal to 1/72 of an inch.

### Data Items

**Bottom Margin** - Specifies the distance from the bottom of the paper page to the bottom of the printed page.

**Collate Pages** - When selected, the pages are collated when multiple copies are printed.

**Current Record Only** - When selected, the data and results will be printed for the current record only. When not selected, the data and results will only be printed for records in the current selection set.

**Grid Format** - When selected, the report will be printed using a grid (spreadsheet) style format, and the additional options located below the Grid Format option are enabled.

**Include (Report Sections)** - Specifies which sections of the database data and results are included in the printed report.

**Landscape Orientation** - When selected, landscape orientation will be used when printing. When unselected, the pages will be printed using portrait orientation.

**Left Margin** - Specifies the distance from the left side of the paper page to the left side of the printed page.

**Number Of Copies** - Specifies the number of copies to be printed. Enter a value greater than zero (0).

**Print Page Numbers** - When selected, the page numbers will be printed.

**Printer Setup** - Specifies the print device to use.

**Right Margin** - Specifies the distance from the right side of the paper page to the right side of the printed page.

**Top Margin** - Specifies the distance from the top of the paper page to the top of the printed page.

### Command Buttons

---

**?** - Displays the Font screen.

**Cancel** - Closes the screen without printing.

**Print** - Proceeds with the Print routine.

**Printer Setup** - Displays the Print Setup screen. The contents of the screen will vary depending on the selected print device and the operating system being used.



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### Notes & Considerations

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- If the *Current Record Only* option is not selected, data and results will be printed for all records displayed in the report.
- If the *Grid Format* option is selected, the report will be printed in a spreadsheet-style grid format.
- If the *Inspection Form* item is selected, a blank inspection form will be printed for each associated station record. The Inspection Form can be used as a guideline for performing field inspections.
- If the *GasValve Style Design* item is selected, an abbreviated document-style report containing information similar to that produced by the defunct GasValve software will be printed.

### Print Settings - Short Form

StationManager uses two Print Settings screens - the “long” form and the “short” form. The “Short Form” is displayed when either the *Print* icon or the *Print* command button is clicked from one of the various data screens and some reports. The Print Settings screen allows various printer settings to be set by the User. The features associated with the screen are described as follows.



**Print Settings...**

**Page Layout...**

Top Margin: 0.50 Inches Left Margin: 0.50 Inches  
 Bottom Margin: 0.50 Inches Right Margin: 0.50 Inches

**Font Settings...**

Name: Arial Size: 8.0 points

**Other Settings...**

Number Of Copies: 1 ☒ Print Border ☒ Landscape Orientation

Printer: Adobe PDF

Printer Setup

Cancel Print Close

### Displayed Items

**Name** - Displays the name of the font to be used when printing. Double-click in the data field to open the Font settings screen. Select the desired font, then click the *OK* command button.

**Size** - Displays the size of the font to be used when printing. Double-click in the data field to open the Font settings screen. Select the desired size, then click the *OK* command button. The size is expressed in printer points. One printer point is approximately equal to 1/72 of an inch.

### Data Items

**Bottom Margin** - Specifies the distance from the bottom of the paper page to the bottom of the printed page.

**Landscape Orientation** - When selected, landscape orientation will be used when printing. When unselected, the pages will be printed using portrait orientation.

**Left Margin** - Specifies the distance from the left side of the paper page to the left side of the printed page.

**Number Of Copies** - Specifies the number of copies to be printed. Enter a value greater than zero (0).

**Print Border** - When selected, a border will be included on the printed report.

**Printer** - Specifies the printer or plotter to be used. Select a printer from the list.

**Right Margin** - Specifies the distance from the right side of the paper page to the right side of the plotted image.

**Top Margin** - Specifies the distance from the top of the paper page to the top of the plotted image.

### Command Buttons

---

**?** - Displays the Font screen.

**Cancel** - Closes the screen without proceeding with the Print routine.

**Close** - Closes the screen and saves changes without proceeding with the Print routine.

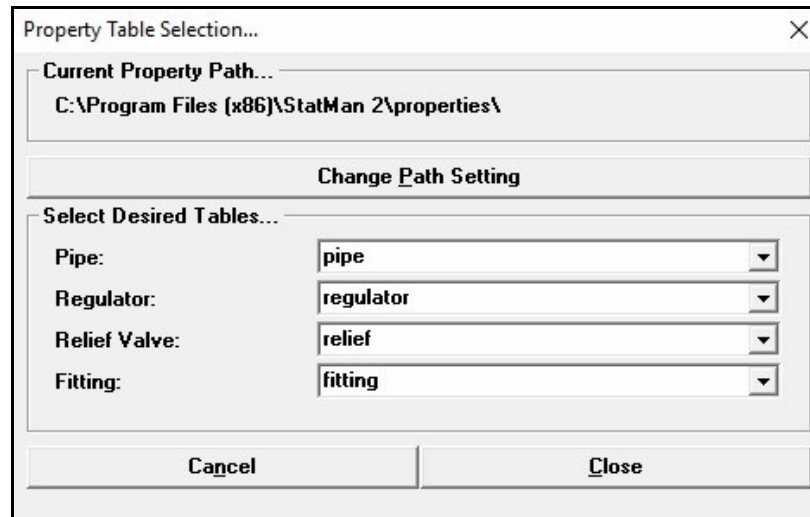
**Print** - Proceeds with the Print routine.

**Printer Setup** - Displays the Print Setup screen. The contents of the screen will vary depending on the selected printer and the configuration of the computer system.



### Property Table Selection

The various Property Tables used by StationManager may be set using the Property Table Selection screen. The Property Table Selection screen is accessed by selecting the *Property Tables* item from the *File* menu. The features associated with the screen are described as follows.



### Displayed Items

**Current Property Path** - Displays the current location (path) of the Property Table files. The path may be changed by clicking the *Change Path Setting* command button or by double-clicking on the current path label.

### Data Items

**Fitting** - Specifies the current Fitting Property Table to be used for the fitting values.

**Pipe** - Specifies the current Pipe Property Table to be used for the pipe values.

**Regulator** - Specifies the current Regulator Property Table to be used for the regulator values.

**Relief Valve** - Specifies the current Relief Valve Property Table to be used for the relief valve values.

### **Command Buttons**

---

**Cancel** - Closes the screen without saving changes.

**Change Path Setting** - Displays the Path Settings screen to change the path location for the Property Tables.

**Close** - Closes the screen and saves changes.

### **Notes & Considerations**

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- The Property Table lists only contain Property Tables stored in the currently specified Property Table location. All of the Property Tables used by a database need to be located in the same directory.

### Query Specifications

The station records displayed in the Station Data Report can be selectively filtered to create what is known as a “selection set.” A selection set is created using the Query Specifications screen. The screen is accessed by clicking the *Make Selection Set* icon from the Station Data Report. The features associated with the screen are described as follows.



Query Specifications...

**Find Records Where...**

Where...	Is...	Value...
Hyd - Dn Relief Valve - Size/Type	=	

**Saved Specifications...**

**Save Current Specification** **Delete Displayed Specification**

**Perform Query** **Close**

### Data Items

**Is** - Specifies the search operator to be used during the Query Selection. The search operator specifies the relation between the *Where* and *Value* items.

**Saved Specifications** - Specifies a previously saved Query Specification to use for the current specification.

**Where** - Specifies which data item is to be used as the search item during the Query Selection.

**Value** - Specifies the value to be used as the check value during the Query Selection. The characteristics of this item will change depending on the selected *Where* item.

### Command Buttons

**Close** - Closes the screen.

**Delete Displayed Specification** - Deletes the currently displayed specification in the *Saved Specifications* list.

**Perform Query** - Performs the query selection.



**Save Current Specification** - Saves the currently displayed specification in the *Find Records Where* data fields.

### Notes & Considerations

- A selection set is cleared by clicking the *Reset Selection Set* icon from the Station Data Report.
- The meanings of the search operators are:



<i>Operator</i>	<i>Description</i>	<i>Applies To</i>
= (Equal To)	Finds all records with a <i>Where</i> item is equal to the <i>Value</i> item.	Numeric & String values
< > (Not Equal To)	Finds all records with a <i>Where</i> item is not equal to the <i>Value</i> item.	Numeric & String values
< (Less Than)	Finds all records with a <i>Where</i> item is less than the <i>Value</i> item.	Numeric values only
> (Greater Than)	Finds all records with a <i>Where</i> item is greater than the <i>Value</i> item.	Numeric values only
< = (Less Than Or Equal To)	Finds all records with a <i>Where</i> item is less than or equal to the <i>Value</i> item.	Numeric values only
> = (Greater Than Or Equal To)	Finds all records with a <i>Where</i> item is greater than or equal to the <i>Value</i> item.	Numeric values only
All	Finds all records associated with the specified <i>Where</i> item.	Any
Ends With	Finds all records that end with the specified <i>Value</i> item.	String values only
Like	records with a <i>Where</i> item that contains the specified <i>Value</i> item.	String values only
Maximum	Finds a specified number of records which possess the highest <i>Value</i> items.	Numeric values only
Minimum	Finds a specified number of records which possess the lowest <i>Value</i> items.	Numeric values only

<i>Operator</i>	<i>Description</i>	<i>Applies To</i>
Not Like	Finds all records that do not contain the specified <i>Value</i> item.	String values only
Starts With	Finds all records that start with the specified <i>Value</i> item.	String values only

- If a selection is repeatedly used, it is convenient to save the specification and then select it from the *Saved Specifications* list when it is needed.

### Report Options

The number of decimal places displayed by the various report and data screens may be set using the Report Options screen. The screen is accessed by selecting the *Set Report Options* item from the *Report* menu. The features associated with the screen are described as follows.

Report Options...

**Number Of Decimals To Report...**

Coordinates:	4	Pressure (Gauge):	2
Diameter:	3	Specific Gravity:	3
Efficiency:	2	Temperature:	1
Elevation:	0	Valve Factors:	0
Flow Rate:	3	Velocity:	2
Heat Ratio:	3	Viscosity:	6
Length:	1		
Pressure (Abs):	2		

**Other Settings...**

Coordinate Heading:	X Coordinate, Y Coordinate
Coordinate Data Type:	Numeric (1.23)
Default Data Screen:	Station Data Entry Screen

Cancel Close

### Data Items

**Coordinate Data Type** - Specifies the numeric format to be used to enter and display coordinate values.

**Coordinate Heading** - Specifies the text to display for the column heading or data label for coordinate values.

**Default Data Screen** - Specifies the default data screen that is displayed when the station, run, or stage item is double-clicked on the Station Data Report screen.

**Number Of Decimals To Report** - Specifies the number of decimal places to display for the associated item.

### **Command Buttons**

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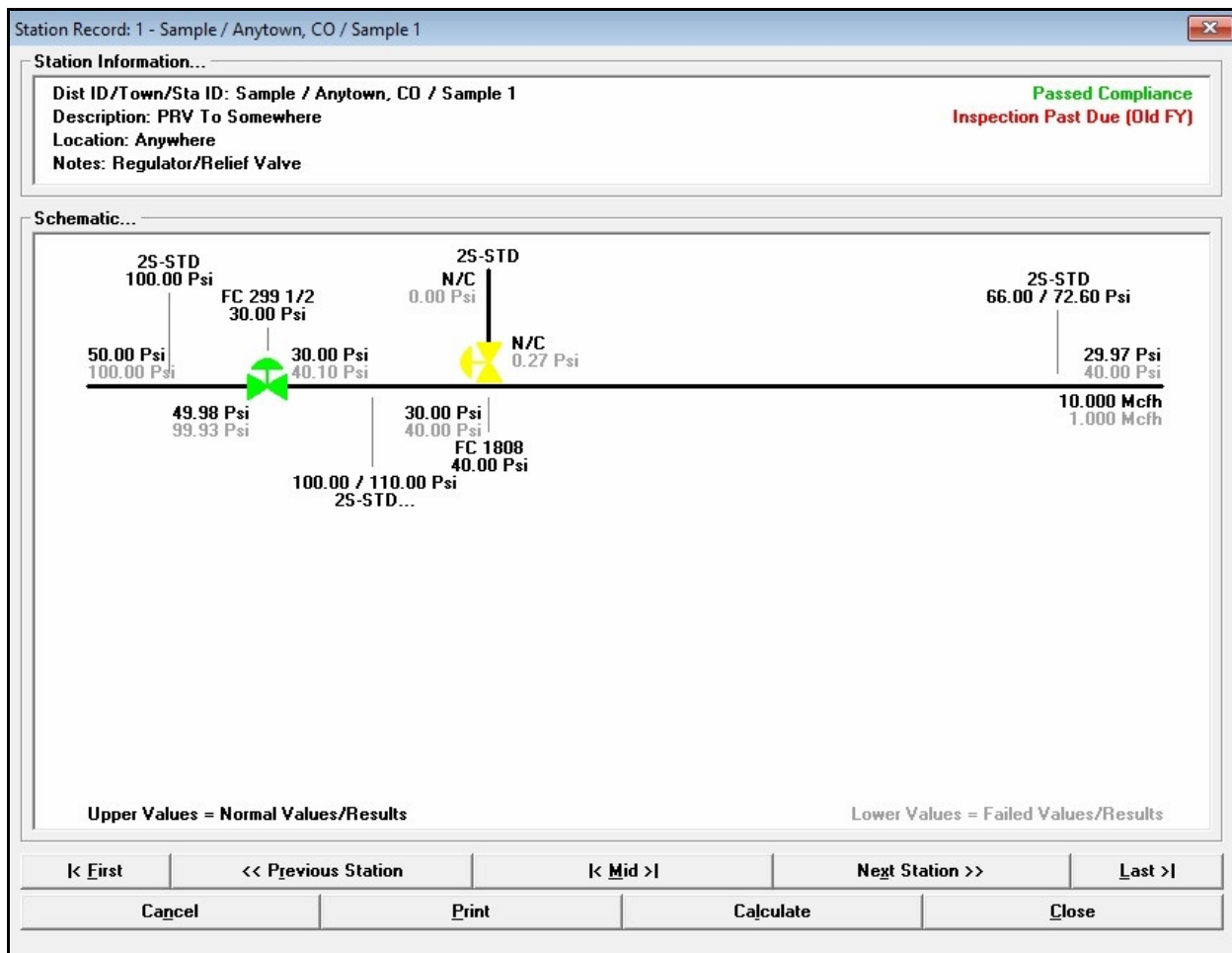
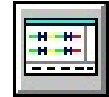
**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.



### Schematic Data Interface

The Schematic Data Interface allows data and results to be edited and viewed graphically. The interface allows data to be entered and reviewed by selecting an item on the schematic display. The Schematic Data Interface is accessed by clicking the *Schematic Interface* icon from the Station Data Report. Additional data screens are accessed by clicking on an item or graphic displayed on the schematic. The features associated with the screen are described as follows.



### Displayed Items

#### Schematic -

**Device Size/Type Code** - Displays data for a specific device.



**Device Set Pressure** - Displays set pressure for a specific device.

**Flow Values** - Displays data or results for a specific location. See the following *Notes & Considerations* section for more information.

**MAOP/Allowable Pressure Values** - Displays the MAOP and allowable build-up pressure values for a specific pipe segment.

**Pipe Size/Type Code** - Displays data or results for a specific pipe segment.

**Set/Calculated Pressure Values** - Displays data or results for a specific location. See the following *Notes & Considerations* section for more information.

### ***Station Information -***

**Area/Description** - Displays additional descriptive information for the associated station.

**Compliance Status** - Displays the status of the latest calculation results for the associated station.

**District ID/Town/Station ID** - Displays the descriptive information for the district identification, the town, and the station identification information for the associated station.

**Inspection Status** - Displays the status of the latest field inspection results for the specified year for the associated station.

**Location** - Displays the descriptive location of the associated station.

**Notes** - Displays comments and notes for the associated station.

### **Command Buttons**

---

**Calculate** - Calculates the current station results. A screen is displayed reporting the results of the calculation.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen.

**First** - Displays the first station record in the current report.

**Last** - Displays the last station record in the current report.

**Middle** - Displays the station in the middle of the current report.

**Next Station** - Displays the next station in the current report.

**Previous Station** - Displays the previous station in the current report.

**Print** - Displays the Print Settings screen to print the contents of the schematic.

### Notes & Considerations

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- Select a displayed data item value on the Schematic Data Interface to access the associated data entry screen. For example, select the upstream pipe Size/Type Code to access the Data Entry Form for the upstream piping. Data screens are associated with all of the displayed data values. Device data entry screens can also be accessed by selecting the associated device symbol.
- To set the station and run configuration, click in an empty area of the schematic. The Station Configuration screen is displayed.
- When two values are displayed for a data or results item, the upper or darker text represents the value associated with normal operating conditions - and the lower or lighter text represents the value associated with failed operating conditions.
- The supply is assumed to be located on the left side of the schematic, and the flow is from left to right through the station. The components associated with the first stage are grouped on the left side of the schematic, and the second-stage components are grouped on the right side of the schematic. The components associated with the first run are displayed in the upper portion of the screen, and the second run components are displayed in the lower portion of the screen.
- When an error occurs during the calculation, the affected item may be colored red on the schematic display.
- When the stack flow velocity reaches sonic velocity (choked flow), the associated stack component item will be colored orange.
- The various data screens are accessed by selecting an associated item displayed on the schematic. The following figure identifies the selectable items and the associated data screens. The selected item will flash to remind the User which item the display data screen is associated with.

Station Record: 1 - Sample / Anytown, CO / Sample 1

Station Information...

Dist ID/Town/Sta ID: Sample / Anytown, CO / Sample 1  
 Description: PRV To Somewhere  
 Location: Anywhere  
 Notes: Regulator/Relief Valve

Compliance Data: **Passed Compliance**  
 Inspection Past Due (Old FY)

Schematic...

Upper Values = Normal Values/Results  
 Lower Values = Failed Values/Results

Buttons: < First, << Previous Station, < Mid >, Next Station >>, Last >, Cancel, Print, Calculate, Close

- |                                     |                                |
|-------------------------------------|--------------------------------|
| A: General Station Data Items       | E: Inlet Pressure Data Items   |
| B: Compliance Data Items            | F: Piping Data Items           |
| C: Inspection Data Items            | G: Device Data Items           |
| D: Station Configuration Data Items | H: Station Capacity Data Items |

- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on the schematic.

### Compliance Data

When using the Schematic Data Interface, the Compliance Data is accessed by clicking on the Compliance Results data item (the “B” item group) displayed on the Schematic Data Interface. When the appropriate item is selected, the Compliance Data screen is displayed. The screen contains a separate data tab for each run and stage of the station. The features associated with the screen are described as follows.

The screenshot shows the 'Compliance Data...' window. It contains several sections: 'Maximum Capacities...' with 'Regulator (Failed): 30.058' and 'Relief Valve: 116.657 Mcfh'; 'Pressure...' with a table of MAOP, Allowable, and Max Calculated pressures for Upstream, Intermediate, and Downstream piping; 'Calculation...' with a status message box showing 'Normal: Passed', 'Failed: Passed', and 'Compliance: Passed'; and 'Reviewed By' and 'Review Date' fields. At the bottom, there are navigation buttons: '<Back', 'Next>', 'Run 1 Stage 1', 'Run 1 Stage 2', 'Run 2 Stage 1', 'Run 2 Stage 2', '<Previous Station', 'Cancel', 'Close', 'Next Station>', and a 'Close & Calculate' button.

	MAOP	Allowable	Max Calculated	
Upstream Piping:	100.00	100.00	100.00	Psi
Intermediate Piping:	100.00	110.00	40.10	Psi
Downstream Piping:	66.00	72.60	40.00	Psi

### Data Items

**Date** - Specifies the date when the station data and calculation results were reviewed. Enter a value using the following format - MM/DD/YYYY.

**MAOP** - Specifies the Maximum Allowable Operating Pressure during normal operating conditions for the associated piping section.

**Override Failed Conditions - See Station Notes** - When selected, the status of a failed station will be ignored or “overridden” by the User. This item is only displayed when at least one stage of a station has failed.

**Reviewed By** - Specifies who reviewed the station data and calculation results.

### Calculated Items

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**Allowable Build-Up Pressure** - Displays the maximum code allowable build-up pressure during failed conditions for the associated piping section.

**At Maximum Inlet Pressure** - Displays the maximum capacity of the station when the supply pressure is set to the minimum entered inlet pressure. This item is only displayed when the station is a monitor-style configuration.

**At Minimum Inlet Pressure** - Displays the maximum capacity of the station when the supply pressure is set to the minimum entered inlet pressure. This item is only displayed when the station is a monitor-style configuration.

**Maximum Calculated Pressure** - Displays the maximum calculated pressure during failed conditions for the associated piping section.

**Regulator (Failed)** - Displays the maximum capacity of the regulator under failed conditions.

**Regulator (Normal)** - Displays the maximum capacity of the regulator under normal conditions.

**Relief Valve** - Displays the maximum calculated relief valve capacity.

**Required** - Displays the required relief capacity for relief valve only stages.

**Status/Error Message** - Displays the status of the calculation results.

### Command Buttons

---

**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

**Close & Calculate** - Closes the screen and calculates the results for the current station. A message will be displayed reporting the results of the calculation.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

**Next Station** - Displays the next station in the current report.

**Previous Station** - Displays the previous station in the current report.

### Notes & Considerations

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- If the *Override Failed Conditions* option is selected for a failed station, it is suggested that a comment be added to the notes section for the station explaining the justification for the override action.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this screen.
- See the *Appendix* section for a description of the calculation methods for the various compliance results.

### Device Settings

When using the Schematic Data Interface, the Downstream Device Data and Upstream Device Data are accessed by clicking on any of the Downstream or Upstream Device symbols or data items (the “G” item groups) displayed on the Schematic Data Interface. When an appropriate item is selected, the associated Device Settings screen is displayed. The features associated with the screen are described as follows.

### Device Settings - Device Tab

The screenshot shows the 'Upstream Device Settings...' dialog box with the 'Device' tab selected. The dialog has four tabs: 'Device', 'Set Pressures', 'Equipment', and 'Meter/Recorder'. The 'Device Data...' section contains the following fields:

- Manufacturer:** Fisher Controls (dropdown)
- Model:** 299 (dropdown)
- Body Size:** 1-1/2 (dropdown)
- Orifice Size:** 1/2 (dropdown)
- Size/Type Code:** FC 299 1/2 (dropdown with an 'i' icon)
- Valve Factor - Normal/Wide Open:** 200 / 203 (text field, highlighted in yellow)
- ☐ **Entered Capacity Value:**

At the bottom of the dialog, there are four buttons: '<Back', 'Cancel', 'Close', and 'Next>'. Below these buttons is a 'Close & Calculate' button.

### Data Items

**Body Size** - Specifies the body size associated with the desired device.

**Entered Capacity Value** - When selected, a data field will be displayed to enter the capacity value.

**Manufacturer** - Specifies the manufacturer's name associated with the desired device.

**Model** - Specifies the model name or number associated with the desired device.

**Number Of Valves** - Specifies the number of relief valves installed at the downstream device location.

**Orifice Size** - Specifies the orifice size associated with the desired device.

**Shared Relief Valve(s)** - When selected, this device is shared between runs. This item is only displayed when the downstream device is a relief valve.

**Size/Type Code** - Specifies the Size/Type Code of the defined device.

### Calculated Items

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*When the Downstream Device is a Relief Valve -*

**Valve Factor/Orifice Area** - Displays the valve factor (first value) and the orifice area (second value) for the selected valve. The value is taken from the associated Property Table.

*When the Downstream Device is a Regulator -*

**Valve Factor - Normal/Wide Open** - Displays the working factor (the first value) and the failed factor (the second value) for the selected valve. The value is taken from the associated Property Table.



### Device Settings - Set Pressures Tab

	Normal...	Failed...	
Inlet Pressure:	49.98	99.93	Psi
Outlet Pressure:	30.00	40.10	Psi
Pressure Drop:	19.98	59.82	Psi
Flow Rate:	10.000	30.058	Mcfh
Maximum Capacity:	15.199	30.058	Mcfh

### Data Items

**Set Pressure** - Specifies the set pressure for the downstream device.

*If the Downstream Device is a Relief Valve -*

**Minimum Build-Up** - Specifies a User-defined minimum build-up pressure for the downstream device. See the following *Notes & Considerations* section for more information.

### Calculated Items

**Flow Rate** - Displays the calculated flow rate through the downstream device at the associated conditions.

**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream side of the downstream device at the associated conditions.

**Maximum Capacity** - Displays the calculated maximum flow rate, which could be produced by the downstream device at the associated conditions.

**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream side of the downstream device at the associated conditions.

**Pressure Drop** - Displays the calculated linear pressure drop across the downstream device at the associated conditions.

### Device Settings - *Equipment Tab*

Upstream Device Settings...

Device	Set Pressures	Equipment	Meter/Recorder
Equipment...			
Data Item...	Item Value...		
Device - Size/Type Code	FC 299 1/2		
Device - Manufacturer	Fisher Controls		
Device - Model	299		
Field Settings...			
Device	Initial	Final	Units
Up Device/Pilot 1	0	0	Psi
Up Pilot 2	0	0	Psi
Performed By: <input type="text"/>		Date: <input type="text"/>	
<input type="button" value="Back"/> <input type="button" value="Cancel"/> <input type="button" value="Close"/> <input type="button" value="Next"/>			
<input type="button" value="Close &amp; Calculate"/>			

### Data Items

#### Equipment Device -

**Connection Style** - Specifies the end connection style of the device.

**Diaphragm Size** - Specifies the main body diaphragm size of the device.

**Diaphragm Type** - Specifies the main body diaphragm type of the device.

**Maximum Body Pressure** - Specifies the maximum pressure of the device's main body.

**Pressure Units** - Specifies the dimensional units for the associated pressure values.

**Serial Number** - Specifies the serial number of the device.

**Spring Color** - Specifies the color of the main spring of the device.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the main spring.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the main spring.

**Spring Number** - Specifies the sizing/rating number of the main spring.

### ***Equipment Pilot 1/Pilot 2 -***

**Manufacturer** - Specifies the manufacturer's name of the associated pilot regulator.

**Maximum Body Pressure** - Specifies the maximum pressure rating of the body of the associated pilot regulator.

**Model** - Specifies the model name or number of the associated pilot regulator.

**Pressure Units** - Specifies the dimensional units for the associated pressure values.

**Spring Color** - Specifies the color of the spring of the associated pilot regulator.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the spring of the associated pilot regulator.

**Spring Minimum Pressure** - Specifies the minimum pressure rating for the spring for the associated pilot regulator.

**Spring Number** - Specifies the sizing/rating number of the spring of the associated pilot regulator.

### ***Field Settings -***

**Date** - Specifies the date when the settings were made or observed. Enter a value using the following format - MM/DD/YYYY.

**Dn Device/Pilot 1 (Initial/Final)** - Specifies the initial (as found) and the final (as left) settings for the main device or main pilot.

**Dn Pilot 2 (Initial/Final)** - Specifies the initial (as found) and the final (as left) settings for the secondary pilot.

**Performed By** - Specifies who made or observed the settings.

### Calculated Items

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**Equipment Device** - These values are taken from the associated Property Table for the specified Size/Type Code.

**Body Size** - Displays the body size associated with the selected Size/Type Code.

**Manufacturer** - Displays the manufacturer's name associated with the selected Size/Type Code.

**Model** - Displays the model name or number associated with the selected Size/Type Code.

**Orifice Size** - Displays the orifice size associated with the selected Size/Type Code.

**Size/Type Code** - Displays the Size/Type Code of the selected device (for reference only).

### Device Settings - *Meter/Recorder Tab*

### Data Items

**Capacity - Maximum** - Specifies the maximum capacity of the meter installed at the station. If a meter is installed, enter a value by typing it into the data field. Otherwise, leave the data field empty.

**Capacity - Minimum** - Specifies the minimum capacity of the meter installed at the station. If a meter is installed, enter a value by typing it into the data field. Otherwise, leave the data field empty.

**Connection Type** - Specifies the meter end connection type of the meter.

**High Range** - Specifies the upper limit of the pressure recorder installed at the station. If a recorder is installed, enter a value by typing it into the data field. Otherwise, leave the data field empty.

**Low Range** - Specifies the lower limit of the pressure recorder installed at the station. If a recorder is installed, enter a value by typing it into the data field. Otherwise, leave the data field empty.

**Make/Type** - Specifies the name of the manufacturer and model or type of the data recorder installed at the station. If a recorder is installed, select an item from the list. Otherwise, leave the drop-down list empty.

**Pressure Rating** - Specifies the maximum pressure rating of the meter installed at the station. If a meter is installed, enter a value by typing it into the data field. Otherwise, leave the data field empty.

**Size/Type Code** - Specifies the Size/Type Code of the meter installed at the station. If a meter is installed, select an item from the list. Otherwise, leave the drop-down list empty.

### Command Buttons

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**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

**Close & Calculate** - Closes the screen and calculates the results for the current station. A message will be displayed reporting the results of the calculation.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

### Notes & Considerations

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- All values shown in the Device Data lists are taken from the associated Property Table.
- To select a device, first select the Manufacturer, then the Model, Body Size, and Orifice Size. The corresponding device Size/Type Codes will be listed in the *Size/Type Code* list.
- When the *Entered Capacity Value* option is selected, the entered value is used in the compliance comparison; no capacity and limited hydraulic calculations are performed for the associated device.
- The meter Size/Type Code may be entered by typing or selected from the list of existing values. When a new type is entered by typing, it is added to the list of existing values and can then be selected if it is used with another station.
- The Minimum Build-Up Pressure allows the User to specify a minimum build-up pressure for the downstream device. The build-up pressure represents the increase in pressure above the set pressure on the inlet side of the relief valve. If the actual calculated build-up pressure is less than the specified minimum build-up pressure, the minimum build-up pressure value is used in the compliance check. If the actual calculated value is greater, the calculated value is used in the compliance check.

- Multiple meters and pressure records are not supported.
- The pressure recorder *Make/Type* value may be entered by typing or selected from the list of existing values. When a new type is entered by typing, it is added to the list of existing values and can then be selected if it is used with another station.
- When the *Back* or *Next* command buttons are clicked, the data contained on the screen is saved, and the next “logical” data screen or data tab will be displayed.



### General Station Data

When using the Schematic Data Interface - General Station Data information is accessed by clicking on one of the General Station Data items (the “A” item group) displayed on the Schematic Data Interface. When an appropriate item is selected, the General Station Data screen is displayed. Changes made in this screen will be reflected on the Schematic Data Interface screen. The features associated with the screen are described as follows.

### General Station Data - Location/Configuration Tab

General Station Data...

**Location/Configuration**    Gas Properties/Miscellaneous    Images

**Location Information...**

District Identification: Sample

City/Town: Anytown    State: CO

Legal Description: Sec Rng Twn

Station Identification: Sample 1

Area/Description: PRV To Somewhere

Location: Anywhere

X Coordinate: 22.3450    Y Coordinate: 44.5670    Degrees L/L

**Configuration...**

Operating Status: In Service

Number Of Runs: 1

Stages Per Run: 1

**Capacity, Mcfh...**

Minimum Required: 1.00

Maximum Required: 10.00

<Back    Cancel    Close    Next>

Close & Calculate

### Data Items

**Area/Description** - Specifies any additional descriptive information about the station.

**City/Town** - Specifies the city or town associated with the station location.

**District Identification** - Specifies the pressure or operating district associated with the station.

**Legal Description** - Specifies the “legal” description of the station location. For example, Southwest 1/4 of Section 28.

**Location** - Specifies the descriptive location of the station. For example, the Northeast corner of 1<sup>st</sup> and Main Streets.

**Maximum Required** - Specifies the maximum required flow capacity of the station.

**Minimum Required** - Specifies the minimum required flow capacity of the station.

**Number Of Runs** - Specifies the number of runs for the station.

**Operating Status** - Specifies the station’s operating status.

**Stages Per Run** - Specifies the number of pressure cuts/stages for each run.

**State** - Specifies the state associated with the station location.

**Station Identification** - Specifies the station’s identification assignment. For example, TBS #1.

**X Coordinate/Y Coordinate** - Specifies the coordinates for the station’s location.

### General Station Data - Gas Properties/Miscellaneous Tab

General Station Data...

Location/Configuration      Gas Properties/Miscellaneous      Images

**Gas Properties...**

Elevation: 0 ft

Atmospheric Pressure: -99.00 Psi (Abs)

Flowing Temperature: 60.0 F

Base Pressure: 14.73 Psi (Abs)

Base Temperature: 60.0 F

Specific Gravity: 0.600

Viscosity: 0.000007 Lbm/Ft-sec

Specific Heat Ratio: 1.300

**Miscellaneous Data...**

In-Service Date: 07/04/2004

Jurisdiction: US DOT

Designed By: Joe Designer

Design Date: 03/06/2004

Entered/Revised By: Joe Entry

Entry/Revision Date: 07/07/2004

Comments/Notes:

Regulator/Relief Valve

<Back      Cancel      Close      Next>

Close & Calculate

### Data Items

**Base Pressure** - Specifies the pressure basis for the measured/stated volumes.

**Base Temperature** - Specifies the temperature basis for the measured/stated volumes.

**Comments/Notes** - Displays any notes associated with the station configuration, location, or operation.

**Design Date** - Specifies the date when the station was initially designed. Enter a value using the following format - MM/DD/YYYY.

**Designed By** - Specifies who designed the station.

**Elevation** - Specifies the height above mean sea level of the station's location.

**Entered/Revised By** - Specifies who entered or last reviewed the data for the station.

**Entry/Revision Date** - Specifies the date when the station data was entered or last revised. Enter a value using the following format - MM/DD/YYYY.

**Flowing Temperature** - Specifies the average gas flowing temperature at the station's inlet.

**In-Service Date** - Specifies the date when the station was put into service. Enter a value using the following format - MM/DD/YYYY.

**Jurisdiction** - Specifies the regulatory jurisdiction for the station.

**Specific Gravity** - Specifies the average specific gravity of the gas flowing through the station. The value is dimensionless.

**Specific Heat Ratio** - Specifies the average heat ratio of the gas flowing through the station. The value is dimensionless.

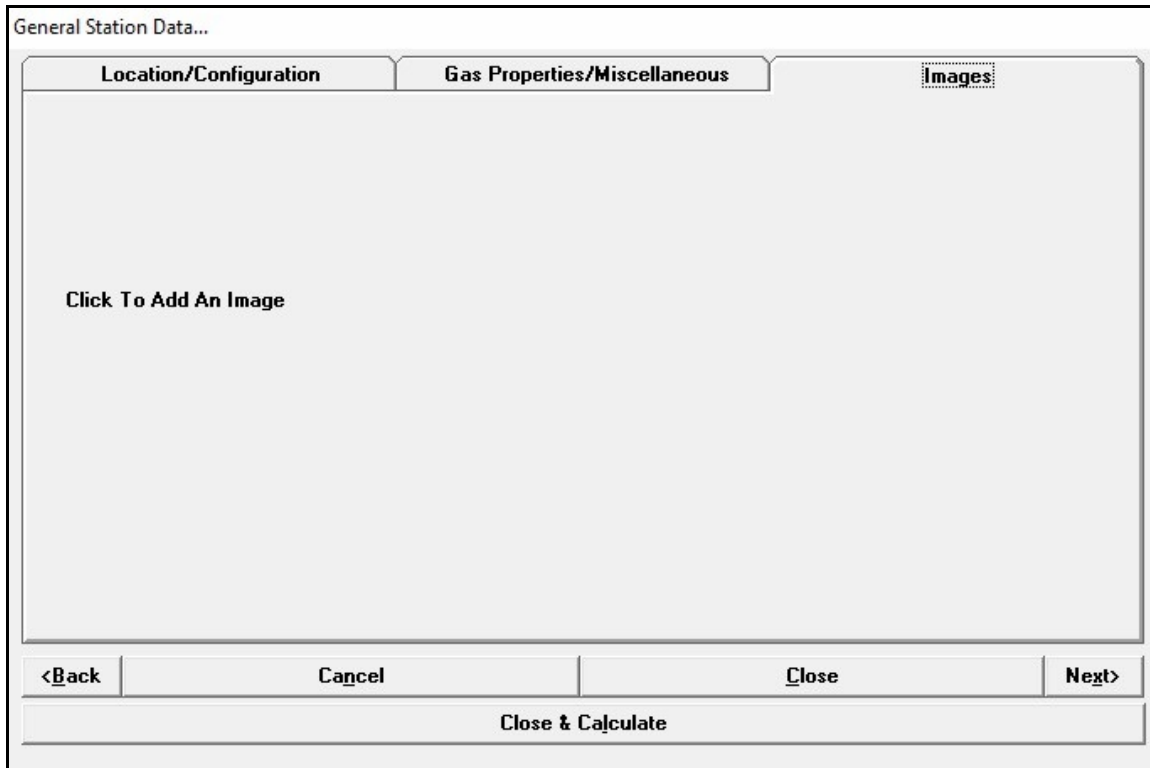
**Viscosity** - Specifies the average absolute or dynamic viscosity of the gas flowing through the station.

### **Calculated Items**

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**Atmospheric Pressure** - Displays the calculated atmospheric pressure based on the specified elevation.

### General Station Data - Images Tab



#### Displayed Items

**Click To Add An Image** - When clicked, the Image Specifications screen is displayed to assign a new or additional image to the station.

**Image** - If an image is displayed, select the image to open the Image Specifications screen to change, view, edit, or unassign the image.

#### Command Buttons

**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.



**Close & Calculate** - Closes the screen and calculates the results for the current station. A message will be displayed reporting the results of the calculation.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

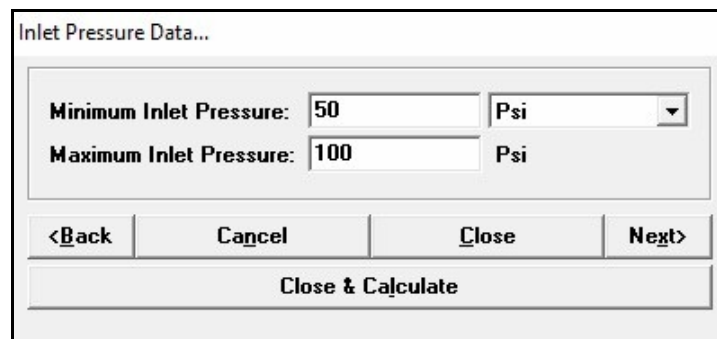
### Notes & Considerations

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- Descriptive data items, such as *Area/Description* and *Location*, are not used as part of the hydraulic calculations, but can be used to enter any alphanumeric data values.
- The station capacity can also be entered or edited by selecting a *Station Capacity* data item, the “G” item group.
- If one of the “not calculated” items is selected for the *Operating Status*, the station will be ignored during the Calculate All routine; however, the station can still be individually calculated.
- The *Jurisdiction* item is for reference only; it does not affect the compliance calculation. The *Regulatory Code/Specification* item in the Calculation Options controls the compliance calculation method.
- When the *Back* or *Next* command buttons are clicked, the data contained on the screen is saved, and the next “logical” data screen or data tab will be displayed.
- See the *Image Specifications* topic in the *Data Screens* section for more information about working with images.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this screen.

### Inlet Pressure Data

When using the Schematic Data Interface, the Inlet Pressure Data is accessed by clicking on the Inlet Pressure Data item (the “E” item group) displayed on the Schematic Data Interface. When the appropriate item is selected, the Inlet Pressure Data screen is displayed. The features associated with the screen are described as follows.



### Data Items

**Maximum Inlet Pressure** - Specifies the maximum actual pressure at the inlet/upstream end of the upstream piping.

**Minimum Inlet Pressure** - Specifies the minimum actual pressure at the inlet/upstream end of the upstream piping.

### Command Buttons

**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

**Close & Calculate** - Closes the screen and calculates the results for the current station. A message will be displayed reporting the results of the calculation.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

### Notes & Considerations

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- When the *Back* or *Next* command buttons are clicked, the data contained on the screen is saved, and the next “logical” data screen or data tab will be displayed.



### Inspection Data

When using the Schematic Data Interface, the Inspection Data is accessed by clicking on the Inspection Results data item (the “C” item group) displayed on the Schematic Data Interface. When the associated item is selected, the Inspection Data screen is displayed. The features associated with the screen are described as follows.

### Inspection Data - *Status Tab*

Inspection Data...

Status	Findings	Notes/Actions
<p>For Year: 2006</p> <p>Previous Inspection Date: 07/05/2004</p> <p>Required Inspection Date: 10/04/2005</p> <p>Inspection Status: Calendar Year Error</p>		

<Previous Station    Cancel    Close    Next Station>

### Data Items

**For Year** - Specifies the calendar year that the inspection was associated with.

**Previous Inspection Date** - Specifies the date of the most previous field inspection. Enter a value using the following format - MM/DD/YYYY.

### Calculated Items

**Inspection Status** - Displays the status of the field inspection for the specified calendar year.

**Required Inspection Date** - Displays the date of the next required field inspection.

### Inspection Data - Findings Tab

Item	Inspection Status
Enclosures OK	N/A
Paint OK	N/A
Site Protection OK	N/A
Signs OK	
Vents OK	Yes
Strainers OK	Yes
Valves OK	Yes

### Data Items

**Data Recorders OK** - Specifies the status of the condition of any installed pressure recorders at the station.

**Enclosures OK** - Specifies the status of the condition of any enclosure, housing, or vault installed at the station.

**Locks OK** - Specifies the status of the condition and presence of any security locks installed at the station.

**OPP Capacity Field Verified** - Specifies the flow capacity of the Over Pressure Protection (OPP) device was field verified or tested.

**OPP Devices Lock-Up OK** - Specifies the Over Pressure Protection (OPP) device passed the “lock-up” (shut off) test.

**OPP Devices Operated** - Specifies the Over Pressure Protection (OPP) device was actually operated during the field inspection.

**OPP Internals Inspected** - Specifies the Over Pressure Protection (OPP) device was dismantled, and the condition of its internal components was inspected.

**Other Observations -See Notes** - Specifies any additional observations or comments are included in the Inspection Notes.

**Paint OK** - Specifies the status of the condition of the paint or atmospheric corrosion protection for the station.

**Regulator Internals Inspected** - Specifies whether the regulator device was dismantled and the condition of its internal components was inspected.

**Regulators Lock-Up OK** - Specifies whether the regulator device passed the “lock-up” (shut off) test.

**Regulators Operated** - Specifies whether the regulator device was actually operated during the field inspection.

**Signs OK** - Specifies the status of the condition of the warning signs and posted notices for the station.

**Site Protection OK** - Specifies the status of the condition of the site protection for the station. For example, fencing, bollards, or livestock guards.

**Strainers OK** - Specifies the status of the condition of any strainers or filters installed at the station.

**Valves OK** - Specifies the status of the condition of the valves for the station.

**Vents OK** - Specifies the condition of the device and enclosure vents for the station.

### Inspection Data - Notes/Actions Tab

### Data Items

**Completed By** - Specifies who performed the required corrective actions.

**Date** (Inspection Notes) - Specifies the date when the field inspection was performed. Enter a value using the following format - MM/DD/YYYY.

**Date** (Required Actions) - Specifies the date when any required actions were completed. Enter a value using the following format - MM/DD/YYYY.

**Inspected By** - Specifies who performed the field inspection.

**Inspection Notes** - Specifies any notes and comments associated with the inspection.

**Required Actions** - Specifies any corrective actions that must be taken to bring the station into compliance.

### Command Buttons

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

**Next Station** - Displays the next station in the current report.

**Previous Station** - Displays the previous station in the current report.

### Notes & Considerations

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- For the *Inspection Findings*, if an item does not apply to the station, select “N/A” (Not Applicable) for the inspection result. If an item has “passed” inspection, select “Yes” for the inspection result. If an item does not pass inspection or was not inspected, leave the result empty. Each item must have a “Yes” or “N/A” entry to “pass” inspection for the current inspection year.



### Pipe Settings (All Segments)

When using the Schematic Data Interface, the Pipe Data is accessed by clicking on any of the Piping Data items (the “F” item group) displayed on the Schematic Data Interface. Items in this group include the upstream, downstream, intermediate, and stack piping sections. When an appropriate item is selected, the associated Pipe Settings screen is displayed. The features associated with the screen are described as follows.

### Pipe Settings - Components Tab - Piping & Fittings Tabs

### Data Items

**ID Number** - Specifies the identification number or another description of the associated component. The description can contain up to twenty (20) alphanumeric characters. For example, the number may represent a valve number, a pipe section number, the facility number, or similar.

**Length** - Specifies the length of the piping component. This item is only displayed for *Piping* components.

**Piping Components** - Displays the components associated with the selected piping segment. The *Components* list can contain pipes and fittings. Use the command buttons directly below the list to modify the contents. The list must contain at least one component.

**Quantity** - Specifies the number or quantity of the selected fitting component. This item is only displayed for *Fitting* components.

**Size/Type** - Specifies the Size/Type Code of the associated component.

### Pipe Settings - Settings/Results Tab

Upstream Pipe Settings...

Components		Settings/Results	
MAOP:	100	Psi	<input type="checkbox"/> Fixed
SMYS:	30000	Psi	
Run Type:	Working - 1st Cut		
Stage Type:	Regulator - Relief Valve		
Efficiency:	95	Percent	
Flow Equation:	IGT-Improved		
	Normal...	Failed...	
Inlet Pressure:	50.00	100.00	Psi
Pressure Drop:	0.02	0.07	Psi
Flow Rate:	10.000	30.058	Mcfh
Velocity:	27.13	46.03	Feet/sec
<div> <span>&lt;Back</span> <span>Cancel</span> <span>Close</span> <span>Next&gt;</span> </div> <div>Close &amp; Calculate</div>			

### Data Items

**Efficiency** - Specifies the pipe flow efficiency value to use for the associated piping for the selected piping section.

**Fixed** - When selected, the MAOP may be adjusted by the allowable build-up during the calculations. This item is not displayed for a stack piping section.

**Flow Equation** - Specifies the pipe flow equation to use for the associated piping of the selected piping section.

**MAOP** - Specifies the Maximum Allowable Operating Pressure of the associated piping of the selected piping section. This item is only displayed for upstream, intermediate, and downstream piping.



**Run Type** - Specifies the operating type of the associated run. This item is only displayed for a piping section.

**SMYS** - Specifies the Specified Minimum Yield Stress for the selected pipe segment. This item is not displayed for a stack piping section.

**Stage Type** - Specifies the configuration type of the associated stage. This item is only displayed for an upstream piping section.

### Calculated Items

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**Flow Rate** - Displays the calculated flow rate through the associated piping for the associated operating conditions.

**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream end of the selected piping section for the associated operating conditions.

**Pressure Drop** - Displays the calculated linear pressure drop across the selected piping section for the associated operating conditions.

**Velocity** - Displays the maximum calculated velocity in the selected piping section for the associated operating conditions.

### Command Buttons

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**Add** - Adds an item to the *Components* list. The new item will be added to the end of the list.

**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Cancel** - Closes the screen without saving changes.

**Close** - Close the screen and saves changes.

**Close & Calculate** - Closes the screen and calculates the results for the current station. A message will be displayed reporting the results of the calculation.

**Delete** - Deletes an item from the *Components* list. The currently highlighted item will be deleted from the list.

**Enter** - Saves changes to the selected (highlighted) component.

**Insert** - Inserts an item into the *Components* list. The new item will be added to the list immediately before the currently highlighted item.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

### Notes & Considerations

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- To add an item to the end of the *Components* list, enter the associated data in the *Segment Data* or *Fitting Data* section, then click the *Add* command button.
- To edit the data associated with an existing component, select the item in the *Components* list. The data associated with the selected item will be displayed in the *Segment Data* or *Fitting Data* section. Make the desired changes, then click the *Enter* command button to save the changes.
- To insert an item into the *Components* list, select the component in the list to insert the new component before. Enter the associated data in the *Segment Data* or *Fitting Data* section, then click the *Insert* command button.
- To delete an item from the *Components* list, select the component to delete in the list, then click the *Delete* command button.
- The screen title/heading will change depending on the pipe section that was selected to access the screen.
- The *SMYS* value is only used under certain high-pressure/high-stress conditions where certain regulatory codes require that the allowable build-up pressure be based on the *SMYS* value. In these cases, the User must enter an appropriate value for the *SMYS* value. In most cases, the value is ignored and can be left empty.
- When the *Back* or *Next* command buttons are clicked, the data contained on the screen is saved, and the next “logical” data screen or data tab will be displayed.

### Station Capacity Data

When using the Schematic Data Interface, the minimum and maximum required Station Capacity Data is accessed by clicking on the Station Capacity data item (the “H” item group) displayed on the Schematic Data Interface. When an appropriate item is selected, the Station Capacity Data screen is displayed. The features associated with the screen are described as follows.

#### Data Items

**Maximum Required** - Specifies the maximum required flow capacity of the station.

**Minimum Required** - Specifies the minimum required flow capacity of the station.

#### Command Buttons

**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

**Close & Calculate** - Closes the screen and calculates the results for the current station. A message will be displayed reporting the results of the calculation.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

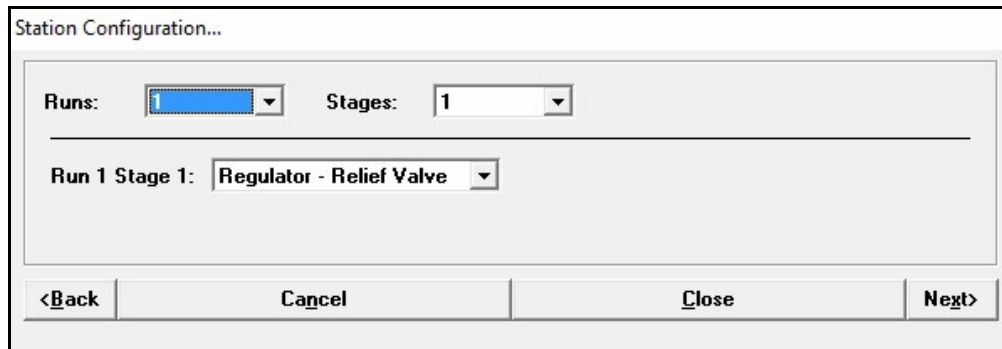
### **Notes & Considerations**

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- The capacity values can also be entered using the General Station Data screen.
- When the *Back* or *Next* command buttons are clicked, the data contained on the screen is saved, and the next “logical” data screen or data tab will be displayed.

### Station Configuration

When using the Schematic Data Interface, the number of runs and stages for each station can be accessed by clicking on an empty area of the schematic display section (the “D”item group) displayed on the Schematic Data Interface. When an appropriate area is selected, the Station Configuration screen is displayed. The features associated with the screen are described as follows.

The image shows a 'Station Configuration...' dialog box. It contains two dropdown menus at the top: 'Runs:' with the value '1' and 'Stages:' with the value '1'. Below these is a horizontal line, followed by a label 'Run 1 Stage 1:' and a dropdown menu showing 'Regulator - Relief Valve'. At the bottom, there are four buttons: '<Back', 'Cancel', 'Close', and 'Next>'.

Runs:	1	Stages:	1
<hr/>			
Run 1 Stage 1:	Regulator - Relief Valve		
<Back	Cancel	Close	Next>

### Data Items

**Runs** - Specifies the number of runs for the associated station.

**Run X Stage Y** - Specifies the devices for each run/stage of the associated station. Certain fields will be visible or hidden depending on the number of runs and stage selected.

**Stages** - Specifies the number of stages for the associated station.

### Command Buttons

**Back** - Displays the data tab to the left of the current data tab, or if clicked on the leftmost data tab, makes the rightmost data tab visible.

**Cancel** - Closes the screen without saving changes.

**Close** - Closes the screen and saves changes.

**Next** - Displays the data tab to the right of the current data tab, or if clicked on the rightmost data tab, makes the leftmost data tab visible.

### **Notes & Considerations**

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- The configuration displayed in the schematic display area will change depending on the values entered on the Station Configuration screen.
- The number of runs and stages can also be set using the General Station Data screen. The stage style can also be set by selecting the Size/Type Code for the “upstream” piping section.

### Station Data Report

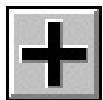
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The Station Data Report is the primary interface for accessing data and records in the database. The report allows various tasks to be performed on the data values and records. It also allows access to the other interface formats. The data values and records are displayed in groups on individual data tabs. The features associated with the screen are described as follows.

The following command buttons and icons are common to all tabs and sections of this screen.

#### Icons

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**Add Record** - Adds a new record to the end of the report.



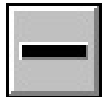
**Calculate Values For All Stations** - Calculates the values for all of the stations in the report. The background color of this icon changes depending on the status of the calculation results. “Green” indicates that all stations have been calculated and passed the calculation and compliance checks. “Yellow” indicates that some data values have been changed since the last calculation. “Red” indicates that a calculation has been performed and that at least one station has failed at least one calculation or compliance check.



**Calculate Values For The Current Station Only** - Calculates the values for the currently selected (highlighted) station record only.



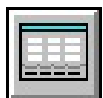
**Clear Non-Default Cell Values** - Clears all of the non-default data values. Using this command will set the value for data items not associated with a default data value to zero (0) or empty, depending on the data type associated with the item.



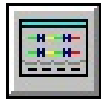
**Delete Record** - Deletes the currently selected (highlighted) record.



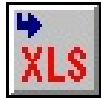
**Display Audit Report** - Displays the Audit Report for the currently selected (highlighted) record.



**Display Data Entry Form** - Displays the Data Entry Form for the currently selected (highlighted) record.



**Display Schematic Interface** - Displays the Schematic Data Interface screen for the currently selected (highlighted) record.



**Export To XLS** - Exports the currently selected (highlighted) record to an Excel format spreadsheet file.



**Find Record** - Finds a record in the report by a specific item value. When clicked, the Find Specifications screen is displayed.



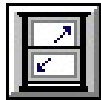
**Go To Record** - Displays a specific Record Number at the top of the report. When clicked, the Go To Record screen is displayed.



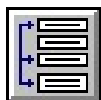
**Insert Record** - Inserts a new record just before the currently selected (highlighted) record.



**Make Selection Set** - Creates a selection set of station records that meet User-specified selection criteria. When clicked, the Query Specifications screen is displayed.



**Maximize The Screen Size** - Increases the report's size to fill the StationManager display.



**Merge Two Stations** - Merges two station records into a single station record. When clicked, the Merge Station Specifications screen is displayed.



**Move Record** - Moves the currently selected (highlighted) record to a new location in the current report. When clicked, a message will be displayed to select the new location. Click the *OK* command button to clear the message, then select the desired location.



**Oops (Undelete)** - Restores (undeletes) a recently deleted station record.

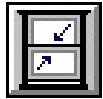


**Perform Mass Update** - Changes data en masse based on User-specified selection criteria. When clicked, the Mass Update Specifications screen is displayed.





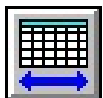
**Print** - Prints the contents of the report. When clicked, the Print Settings screen is displayed.



**Reset Screen Size** - Sets the report's size to its "normal" dimensions and position.



**Reset Selection Set** - Resets (clears) the current selection set. When clicked, all of the reportable station records will now be displayed in the report.



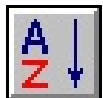
**Restore Columns** - Restores the display of all of the columns (data items). When clicked, all of the columns associated with the report will now be displayed.



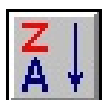
**Save Current Selection Set** - Saves the current selection set to a new model. The saved station records will be used to create a new model.



**Set Columns** - Specifies which columns (data items) are displayed in the report. When clicked, the Columns specification screen is displayed.



**Sort Ascending** - Sorts the station records in ascending order (A to Z or lowest to highest value) based on the values in the currently selected column.



**Sort Descending** - Sorts the station records in descending order (Z to A or highest to lowest value) based on the values in the currently selected column.



**Update Values For Current Selection Set** - Changes data en masse for the current selection set. When clicked, the Update Specifications screen is displayed.

## Command Buttons

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**Close** - Closes the report screen.



### General Tab

Station Record	District Identification	City/Town	State	Legal Description	Station Identification	Station Description	Location	X C Dec
>1>	Sample	Anytown	CO	Sec Rng Twn	Sample 1	PRV To Somewhere	Anywhere	
2	Sample	Anytown	CO	Sec Rng Twn	Sample 2	PRV To Somewhere	Anywhere	
3	Sample	Anytown	CO	Sec Rng Twn	Sample 3	PRV To Somewhere	Anywhere	
4	Sample	Anytown	CO	Sec Rng Twn	Sample 4	PRV To Somewhere	Anywhere	
5	Sample	Anytown	CO	Sec Rng Twn	Sample 5	PRV To Somewhere	Anywhere	
6	Sample	Anytown	CO	Sec Rng Twn	Sample 6	PRV To Somewhere	Anywhere	
7	Sample	Anytown	CO	Sec Rng Twn	Sample 7	PRV To Somewhere	Anywhere	
8	Sample	Anytown	CO	Sec Rng Twn	Sample 8	PRV To Somewhere	Anywhere	
9	Sample	Anytown	CO	Sec Rng Twn	Sample 9	PRV To Somewhere	Anywhere	
10	Sample	Anytown	CO	Sec Rng Twn	Sample 10	PRV To Somewhere	Anywhere	

### Displayed Items

**Station Record** - Refers to the position of the associated station record. The item is used for reference only.

### Data Items

#### Capacity -

**Maximum Required** - Specifies the maximum required flow capacity of the station.

**Minimum Required** - Specifies the minimum required flow capacity of the station.

#### Configuration -

**Number Of Runs** - Specifies the number of runs for the station.

**Operating Status** - Specifies the station's operating status.

**Stages Per Run** - Specifies the number of pressure cuts/stages for each run.

### ***Gas Properties -***

**Base Pressure** - Specifies the pressure basis for the measured volumes.

**Base Temperature** - Specifies the temperature basis for the measured volumes.

**Elevation** - Specifies the height above mean sea level of the station's location.

**Flowing Temperature** - Specifies the average gas flowing temperature at the station's inlet.

**Specific Gravity** - Specifies the average specific gravity of the gas flowing through the station. To

**Specific Heat Ratio** - Specifies the average heat ratio of the gas flowing through the station. To

**Viscosity** - Specifies the average absolute or dynamic viscosity of the gas flowing through the station.

### ***Location Information -***

**City/Town** - Specifies the city or town associated with the station location.

**District Identification** - Specifies the pressure or operating district associated with the station.

**Legal Description** - Specifies the "legal" description of the station location. For example, Southwest 1/4 of Section 28.

**Location** - Specifies the descriptive location of the station. For example, the Northeast corner of 1<sup>st</sup> and Main Streets.

**State** - Specifies the state associated with the station location.

**Station Description** - Specifies the descriptive identification of the station.

**Station Identification** - Specifies the station's identification assignment. For example, TBS #1.

**X Coordinate** - Specifies the x-coordinates (horizontal) for the station's location.

**Y Coordinate** - Specifies the y-coordinates (vertical) for the station's location.



### Miscellaneous Data -

**Comments/Notes** - Specifies any comments and notes associated with the station configuration, location, or operation.

**Design Date** - Specifies the date when the station was initially designed. Enter a value using the following format - MM/DD/YYYY.

**Designed By** - Specifies who designed the station.

**Entered/Revised By** - Specifies the who entered or last revised the data for the station.

**Entry/Revision Date** - Specifies the date when the station data was entered or last revised. Enter a value using the following format - MM/DD/YYYY.

**In Service Date** - Specifies the date when the station was put into service. Enter a value using the following format - MM/DD/YYYY.

**Jurisdiction** - Specifies the regulatory jurisdiction for the station.

### Calculated Items

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**Atmospheric Pressure** - Displays the calculated atmospheric pressure based on the specified elevation.

### Notes & Considerations

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- The Station Data Report is the primary interface for accessing data and records in the database. The report allows various record management tasks to be performed, allows data values to be entered or changed, and allows access to the other interface formats. The screen must be open to perform most database edit functions.
- If one of the “not calculated” items is selected for the *Operating Status*, the station will be ignored during the Calculate All routine; however, the station can still be individually calculated.
- The *Jurisdiction* item is for reference only; it does not affect the compliance calculation. The *Regulatory Code/Specification* item in the Calculation Options controls the compliance calculation method.
- Cells with a white background can be edited by clicking on the cell. Cells with a yellow background color represent items that are calculated. Cells with a grey background are fixed and cannot be changed by the User.

- Clicking on a cell in the Station Record column will highlight the adjacent row. Double-clicking on a cell in the Station Record column will open the Default Data Entry screen.
- Double-clicking on a cell in the Station Record column while holding down one of the following keys will open the associated data entry screen.

*Alt* key - Displays the Audit Report screen

*Shift* key - Displays the Schematic Data Interface screen

*Ctrl* key - Displays the station Data Entry Form

- Clicking on a cell representing an item name will highlight the column.
- If no column is selected when one of the sort routines is used, the records are sorted based on the values assigned to the *District Identification* item.
- See the *Mass Update Specifications* topic in the *Data Screens* section for information on the screen features and on the use of the Mass Update routine. When used with the Station Data Report, changes are only applied to the records in the current selection set.
- See the *Export Routine* topic in the *Export Routines* section for information about the XLS export routine and process.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Hydraulic Tab

Station Record: 1 Run: 1 Stage: 1 - Sample, Anytown, CO, Sample 1 - Working - 1st Cut, Regulator - Relief Valve

Station Record	Run Number	Stage Number	Schematic	Configuration		Upstream Piping			
				Run Type	Stage Style	Min Inlet Pressure	Max Inlet Pressure	Pressure Units	Pipe Efficiency Percent
1	1	1		Working - 1st Cut	Regulator - Relief Valve	50.00	100.00	Psi	
2	1	1		Working - 1st Cut	Monitor - Upstream	50.00	100.00	Psi	
3	1	1		Working - 1st Cut	Monitor - Downstream	50.00	100.00	Psi	
4	1	1		Working - 1st Cut	Monitor - Up Working	50.00	100.00	Psi	
5	1	1		Working - 1st Cut	Regulator Only	50.00	100.00	Psi	
6	1	1		Working - 1st Cut	Relief Valve Only	50.00	100.00	Psi	
7	1	1		Working - 1st Cut	Dual Regulators - Relief	50.00	100.00	Psi	
8	1	1		Working - 1st Cut	Regulator - Relief Valve	50.00	100.00	Psi	
		2		Working - 2nd Cut	Regulator - Relief Valve	45.00	45.00	Psi	
9	1	1		Working - 1st Cut	Regulator - Relief Valve	50.00	100.00	Psi	
	2	1		Working - 1st Cut	Regulator - Relief Valve	50.00	100.00	Psi	
	1	1		Working - 1st Cut	Regulator - Relief Valve	50.00	100.00	Psi	
10		2		Working - 2nd Cut	Regulator - Relief Valve	40.00	40.00	Psi	
	2	1		Working - 1st Cut	Regulator - Relief Valve	50.00	100.00	Psi	

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### Displayed Items

**Run Number** - Refers to the number of the run associated with the displayed data. The item cannot be changed by the User.

**Schematic** - Refers to a schematic icon for the station configuration. The item cannot be changed by the User.

**Stage Number** - Refers to the number of the stage associated with the displayed data. The item cannot be changed by the User.

**Station Record** - Refers to the position of the current station record. The item is used for reference only and cannot be changed by the User.

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### Data Items

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#### *Configuration -*

**Run Type** - Specifies the operating type of the associated run.

**Stage Style** - Specifies the configuration type of the associated stage.

#### *Downstream Device -*

**Device Count** - When the downstream device is a relief valve, it specifies the quantity (number) of devices installed.

**Enter Capacity** - Specifies whether the capacity value is entered or calculated.

**Entered Capacity** - Specifies the “entered” capacity value. This item is only enabled when the *Enter Capacity* item is set to “Yes.”

**Minimum Build-Up (Pressure)** - When the downstream device is a relief valve, specifies a User-defined minimum build-up pressure for the relief valve.

**Pressure Units** - Specifies the dimensional units for the associated pressure values.

**Set Pressure** - Specifies the set pressure for the downstream device.

**Shared Device** - When a relief valve is present and more than one run is present, specifies whether the valve is shared by both runs.

**Size/Type Code** - Specifies the Size/Type Code for the downstream device. When clicked, the Device Selection screen is displayed.

**Token Relief** - Specifies whether a token relief valve is installed. This item is only displayed when the device is a regulator.

**Token Relief Set Pressure** - If a token relief valve is installed, specifies the set pressure for the token relief valve. This item is only enabled when the *Token Relief Installed* item is set to “Yes.”

#### *Downstream, Intermediate, Relief Stack Piping -*

**Flow Equation** - Specifies the pipe flow equation to use for the assigned piping components of the associated stage and run.

**Pipe Efficiency** - Specifies the pipe flow efficiency value to use for the assigned piping components of the associated stage and run.



**Piping Components** - Specifies the piping components assigned to the associated piping section of the associated stage and run. When clicked, the Piping Components screen is displayed.

### *Upstream Device -*

**Enter Capacity** - Specifies whether the capacity value is entered or calculated.

**Entered Capacity** - Specifies the “entered” capacity value. This item is only enabled when the *Enter Capacity* item is set to “Yes.”

**Pressure Units** - Specifies the dimensional units for the associated pressure values.

**Set Pressure** - Specifies the set pressure for the downstream device.

**Size/Type Code** - Specifies the Size/Type Code for the upstream device. When clicked, the Device Selection screen is displayed.

**Token Relief** - Specifies whether a token relief valve is installed.

**Token Relief Set Pressure** - If a token relief valve is installed, specifies the set pressure for the token relief valve. This item is only enabled when the *Token Relief Installed* item is set to “Yes.”

### *Upstream Piping -*

**Flow Equation** - Specifies the pipe flow equation to use for the upstream piping components of the associated stage and run.

**Maximum Inlet Pressure** - Specifies the maximum actual pressure at the inlet/upstream end of the upstream piping.

**Minimum Inlet Pressure** - Specifies the minimum actual pressure at the inlet/upstream end of the upstream piping.

**Pipe Efficiency** - Specifies the pipe flow efficiency value to use for the upstream piping components of the associated stage and run.

**Piping Components** - Specifies the piping components assigned to the upstream piping of the associated stage and run. When clicked, the Piping Components screen is displayed.

**Pressure Units** - Specifies the dimensional units for the associated pressure values.



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### Notes & Considerations

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- Some data items may be disabled depending on the station configuration.
- Clicking on a cell representing an item name will highlight the column.
- Cells with a white background can be edited by clicking on the cell. Cells with a yellow background color represents items that are calculated. Cells with a grey background are fixed and cannot be changed by the User. Cells with a cyan background represent items that do not apply to the current record.
- Single-clicking in a cell in the Station Record, Run Number, or Stage Number columns will highlight the adjacent row. Double-clicking in a cell in the Station Record column will open the default data entry screen.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Normal Results Tab

Station Record: 1 Run: 1 Stage: 1 - Sample, Anytown, CO, Sample 1 - Working - 1st Cut, Regulator - Relief Valve



Station Record	Run Number	Stage Number	Status	Upstream Piping						Upstream Device	
				Inlet Pressure	Outlet Pressure	Pressure Drop	Pressure Units	Flow Rate, Mcfh	Velocity, Feet/sec	Inlet Pressure	Pressure Units
1	1	1	Passed	50.00	49.98	0.02	Psi	10.000	27.13	49.98	Psi
2	1	1	Passed	50.00	49.98	0.02	Psi	10.000	27.13	49.98	Psi
3	1	1	Passed	50.00	49.98	0.02	Psi	10.000	27.13	49.98	Psi
4	1	1	Passed	50.00	49.98	0.02	Psi	10.000	27.13	49.98	Psi
5	1	1	Passed	50.00	49.98	0.02	Psi	10.000	27.13	49.98	Psi
6	1	1	Passed	50.00	49.98	0.02	Psi	10.000	27.13		
7	1	1	Passed	50.00	49.98	0.02	Psi	10.000	27.13	49.98	Psi
8	1	1	Passed	50.00	49.98	0.02	Psi	10.000	27.13	49.98	Psi
		2	Passed	45.00	44.98	0.02	Psi	10.000	29.41	44.98	Psi
9	1	1	Passed	50.00	49.99	0.01	Psi	5.000	13.56	49.99	Psi
	2	1	Passed	50.00	49.99	0.01	Psi	5.000	13.56	49.99	Psi
10	1	1	Passed	50.00	49.99	0.01	Psi	5.000	13.56	49.99	Psi
		2	Passed	40.00	39.99	0.01	Psi	5.000	16.04	39.99	Psi
	2	1	Passed	50.00	49.99	0.01	Psi	5.000	13.56	49.99	Psi

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### Displayed Items

**Run Number** - Refers to the number of the run associated with the displayed data. The item cannot be changed by the User.

**Stage Number** - Refers to the number of the stage associated with the displayed data. The item cannot be changed by the User.

**Station Record** - Refers to the record number of the station associated with the displayed data. The item cannot be changed by the User.

**Status** - Refers to the status of the calculation results. A “Failed” value indicates that the run and stage failed one or more of the various value checks. A “Passed” value indicates that the run and stage passed all of the various value checks. An “Ignored” value indicates that the run and stage were ignored during the calculation. The *Calculation Message* item provides additional descriptive information about the value of the status item.

### Calculated Items

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#### *Calculation -*

**Message** - Displays information about the status of the calculation results.

#### *Downstream Device -*

**Inlet Pressure** - Displays the calculated inlet/upstream pressure through the downstream device during normal operating conditions.

**Operating Mode** - Displays the operating mode for the downstream device.

**Outlet Pressure** - Displays the calculated outlet/downstream pressure for the downstream device during normal operating conditions.

**Pressure Units** - Displays the dimensional units for the associated pressure values.

#### *Downstream, Intermediate, Relief Stack, Upstream Piping -*

**Flow Rate** - Displays the calculated flow rate through the associated piping during normal operating conditions.

**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream end of the associated piping of the associated stage and run.

**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream end of the associated piping of the associated stage and run.

**Pressure Drop** - Displays the calculated linear pressure drop across the associated piping of the associated stage and run.

**Pressure Units** - Displays the dimensional units for the associated pressure values.

**Velocity** - Displays the maximum calculated velocity in the associated piping of the associated stage and run.

#### *Upstream Device -*

**Inlet Pressure** - Displays the pressure calculated at the inlet/upstream side of the upstream device during normal operating conditions.

**Outlet Pressure** - Displays the pressure calculated at the outlet/downstream side of the upstream device during normal operating conditions.



**Pressure Units** - Displays the dimensional units for the associated pressure value.

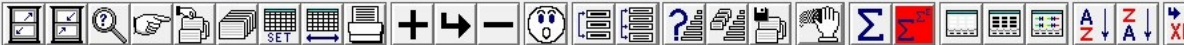
### Notes & Considerations

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- Cells with a white background can be edited by clicking on the cell. Cells with a yellow background color represents items that are calculated. Cells with a grey background are fixed and cannot be changed by the User. Cells with a cyan background represent items that do not apply to the current record.
- Single-clicking in a cell in the Station Record, Run Number, or Stage Number columns will highlight the adjacent row. Double-clicking in a cell in Station Record column will open the default data entry screen.
- Clicking on a cell representing an item name will highlight the column.
- The “Ignored” status is generally caused by an error in the data associated with the record. The *Calculation Message* item will provide additional information on the error. Only one error is described per calculation. If multiple errors exist, the additional errors will be reported as each previous error is corrected and the station is recalculated.
- If “N/C” is displayed in a cell, it indicates that the associated item was not calculated.
- If “S/C” is displayed in a cell, see the compliance data or message for additional information.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Failed Results Tab

Station Record: 1 Run: 1 Stage: 1 - Sample, Anytown, CO, Sample 1 - Working - 1st Cut, Regulator - Relief Valve



Station Record	Run Number	Stage Number	Status	Upstream Piping						Upstream Device	
				Inlet Pressure	Outlet Pressure	Pressure Drop	Pressure Units	Flow Rate, Mcfh	Velocity, Feet/sec	Inlet Pressure	Pressure Units
1	1	1	Passed	100.00	99.93	0.07	Psi	30.058	46.03	99.93	Psi
2	1	1	Passed	100.00	99.99	0.01	Psi	10.000	15.31	99.99	Psi
3	1	1	Passed	100.00	99.99	0.01	Psi	10.000	15.31	99.99	Psi
4	1	1	Passed	100.00	99.99	0.01	Psi	10.000	15.31	99.99	Psi
5	1	1	Passed	100.00	99.93	0.07	Psi	30.058	46.03	99.93	Psi
6	1	1	Passed	100.00	92.31	7.69	Psi	389.811	639.45		
7	1	1	Passed	100.00	99.93	0.07	Psi	29.374	44.98	99.93	Psi
8	1	1	Passed	100.00	99.72	0.28	Psi	62.402	95.73	99.72	Psi
		2	Passed	45.00	44.98	0.02	Psi	8.762	25.76	44.98	Psi
9	1	1	Passed	100.00	99.93	0.07	Psi	29.374	44.98	99.93	Psi
	2	1	Passed	100.00	99.93	0.07	Psi	29.374	44.98	99.93	Psi
10	1	1	Passed	100.00	99.96	0.04	Psi	20.334	31.13	99.96	Psi
		2	Passed	40.00	39.98	0.02	Psi	8.341	26.77	39.98	Psi
		2	1	Passed	100.00	99.96	0.04	Psi	20.334	31.13	99.96

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### Displayed Items

**Run Number** - Refers to the number of the run associated with the displayed data. The item cannot be changed by the User.

**Stage Number** - Refers to the number of the stage associated with the displayed data. The item cannot be changed by the User.

**Station Record** - Refers to the record number of the station associated with the displayed data. The item cannot be changed by the User.

**Status** - Displays the status of the calculation results. A “Failed” value indicates that the run and stage failed one or more of the various value checks. A “Passed” value indicates that the run and stage passed all of the various value checks. An “Ignored” value indicates that the run and stage were ignored during the calculation. The *Calculation Message* item provides additional descriptive information about the value of the status item.

### Calculated Items

---

#### *Calculation -*

**Message** - Displays information about the status of the calculation results.

#### *Downstream Device -*

**Inlet Pressure** - Displays the pressure calculated at the inlet/upstream side of the downstream device during failed operating conditions.

**Operating Mode** - Specifies the operating mode of the downstream device.

**Outlet Pressure** - Displays the pressure calculated at the outlet/downstream side of the downstream device during failed operating conditions.

**Pressure Units** - Displays the dimensional units for the associated pressure values.

#### *Downstream, Intermediate, Relief Stack, Upstream Piping -*

**Flow Rate** - Displays the calculated flow rate through the associated piping under failed operating conditions.

**Inlet Pressure** - Displays the calculated pressure at the inlet/upstream end of the associated piping of the associated stage and run.

**Outlet Pressure** - Displays the calculated pressure at the outlet/downstream end of the associated piping of the associated stage and run.

**Pressure Drop** - Displays the calculated linear pressure drop across the associated piping of the associated stage and run.

**Pressure Units** - Displays the dimensional units for the associated pressure value.

**Velocity** - Displays the maximum calculated velocity in the associated piping of the associated stage and run.

#### *Upstream Device -*

**Inlet Pressure** - Displays the pressure calculated at the inlet/upstream end of the upstream device during failed operating conditions.

**Outlet Pressure** - Displays the pressure calculated at the outlet/downstream end of the upstream device during failed operating conditions.



**Pressure Units** - Displays the dimensional units for the associated pressure values.

### Notes & Considerations

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- Cells with a white background can be edited by clicking on the cell. Cells with a yellow background color represents items that are calculated. Cells with a grey background are fixed and cannot be changed by the User. Cells with a cyan background represent items that do not apply to the current record.
- Single-clicking in a cell in the Station Record, Run Number, or Stage Number columns will highlight the adjacent row. Double-clicking in a cell in Station Record column will open the default data entry screen.
- Clicking on a cell representing an item name will highlight the column.
- The “Ignored” status is generally caused by an error in the data associated with the record. The *Calculation Message* item will provide additional information on the error. Only one error is described per calculation. If multiple errors exist, the additional errors will be reported as each previous error is corrected and the station is recalculated.
- If “N/C” is displayed in a cell, it indicates that the associated item was not calculated.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.



### Compliance Tab

Station Record: 1 Run: 1 Stage: 1 - Sample, Anytown, CO, Sample 1 - Working - 1st Cut, Regulator - Relief Valve

Station Record	Run Number	Stage Number	Status	Capacity, Mcfh		Upstream Piping				MAOP
				Upstream Device	Downstream Device	MAOP	Allowable Build-Up Pressure	Maximum Calculated Pressure	Pressure Units	
1	1	1	Passed	30.058	116.657	100.00	100.00	100.00	Psi	
2	1	1	Passed	11.488	23.639	100.00	100.00	100.00	Psi	
3	1	1	Passed	14.766	29.614	100.00	100.00	100.00	Psi	
4	1	1	Passed	10.885	10.885	100.00	100.00	100.00	Psi	
5	1	1	Passed	29.614		100.00	100.00	100.00	Psi	
6	1	1	Passed	0.000	454.243	100.00	100.00	100.00	Psi	
7	1	1	Passed	29.375	116.657	100.00	100.00	100.00	Psi	
8	1	1	Passed	62.413	233.314	100.00	100.00	100.00	Psi	
		2	Passed	8.763	233.314	100.00	100.00	45.00	Psi	
9	1	1	Passed	29.375	116.657	100.00	100.00	100.00	Psi	
	2	1	Passed	29.375	116.657	100.00	100.00	100.00	Psi	
10	1	1	Passed	20.336	233.314	100.00	100.00	100.00	Psi	
		2	Passed	8.342	233.314	100.00	100.00	40.00	Psi	
		2	1	Passed	20.336	233.314	100.00	100.00	100.00	Psi

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### Displayed Items

**Run Number** - Refers to the number of the run associated with the displayed data. The item cannot be changed by the User.

**Stage Number** - Refers to the number of the stage associated with the displayed data. The item cannot be changed by the User.

**Station Record** - Refers to the record number of the station associated with the displayed data. The item cannot be changed by the User.

**Status** - Refers to the status of the calculation results. A "Failed" value indicates that the station failed one or more of the various value checks. A "Passed" value indicates that the station passed all of the various value checks. A "N/C" value indicates that the station data was not calculated or has been changed since the results were last calculated. The *Calculation Message* item provides additional descriptive information about status value.



### Data Items

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#### *Calculation -*

**Failure Override** - Specifies whether the status of a failed station is to be ignored or “overridden” by the User. This item is only displayed when at least one stage of a station has failed.

**Reviewed By** - Specifies who reviewed the station data and calculation results.

**Reviewed Date** - Specifies the date when the station data and calculation results were reviewed.

#### *Downstream Piping, Intermediate Piping, & Upstream Piping -*

**MAOP** - Specifies the Maximum Allowable Operating Pressure during normal operating conditions for the associated piping section.

### Calculated Items

---

#### *Calculation -*

**Message** - Displays information about the status of the calculation results.

#### *Capacity -*

**Downstream Device** - Displays the maximum calculated capacity of the downstream device.

**Upstream Device** - Displays the maximum calculated capacity of the upstream device.

#### *Downstream Piping, Intermediate Piping, & Upstream Piping -*

**Allowable Build-Up Pressure** - Displays the maximum allowable build-up pressure during failed conditions for the associated piping section. The value is based on the requirements of the specified Regulatory Code.

**Maximum Calculated Pressure** - Displays the maximum calculated pressure during failed or normal conditions for the associated piping section.

**Pressure Units** - Displays the dimensional units for the associated pressure values.



### Notes & Considerations

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- If the *Failure Override* option is set to “Yes” for a failed station, it is suggested that a comment be added to the notes section for the station explaining the justification for the override action.
- Cells with a white background can be edited by clicking on the cell. Cells with a yellow background color represents items that are calculated. Cells with a grey background are fixed and cannot be changed by the User. Cells with a cyan background represent items that do not apply to the current record.
- Single-clicking in a cell in the Station Record, Run Number, or Stage Number columns will highlight the adjacent row. Double-clicking in a cell in Station Record column will open the default data entry screen.
- Clicking on a cell representing an item name will highlight the column.
- The “Ignored” status is generally caused by an error in the data associated with the record. The *Calculation Message* item will provide additional information on the error. Only one error is described per calculation. If multiple errors exist, the additional errors will be reported as each previous error is corrected and the station is recalculated.
- If “N/C” is displayed in a cell, it indicates that the associated item was not calculated.
- The Regulatory Code is specified using the *Set Calculation Options* item found in the *Preferences* submenu of the *File* menu.
- See the *Appendix* section for information about how the various values are calculated.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Inspection Tab

Station Record	For Year	Status				Inspection Results					
		Previous Inspection Date	Required Inspection Date	Completed Inspection Date	Inspection Status	Enclosures OK	Paint OK	Site Protection OK	Signs OK	Vents OK	Strain OK
1	2005	07/05/2004	10/04/2005		Past Due (Old FY)	N/A	N/A	N/A		Yes	Ye
2	2005	07/05/2004	10/04/2005	07/05/2004	Past Due By 4060 Days	N/A	N/A	N/A		Yes	Ye
3	2004	07/05/2004	10/04/2005	07/05/2004	Completed On Time	N/A	N/A	N/A		Yes	Ye
4	2004	07/05/2004	10/04/2005	07/05/2004	Completed On Time	N/A	N/A	N/A		Yes	Ye
5	2004	07/05/2004	10/04/2005	07/05/2004	Completed On Time	N/A	N/A	N/A		Yes	Ye
6	2004	07/05/2004	10/04/2005	07/05/2004	Completed On Time	N/A	N/A	N/A		Yes	Ye
7	2004	07/05/2004	10/04/2005	07/05/2004	Completed On Time	N/A	N/A	N/A		Yes	Ye
8	2004	07/05/2004	10/04/2005	07/05/2004	Completed On Time	N/A	N/A	N/A		Yes	Ye
9	2004	07/05/2004	10/04/2005	07/05/2004	Completed On Time	N/A	N/A	N/A		Yes	Ye
10	2004	07/05/2004	10/04/2005	07/05/2004	Completed On Time	N/A	N/A	N/A		Yes	Ye

### Displayed Items

**Station Record** - Refers to the record number of the station associated with the displayed data. The item cannot be changed by the User.

### Data Items

**For Year** - Specifies the calendar year that the inspection is associated with.

### Inspection Results -

**Data Recorders OK** - Specifies the status of the condition of any pressure recorders installed at the station.

**Enclosures OK** - Specifies the status of the condition of any enclosure, housing, or vault installed at the station.

**Locks OK** - Specifies the status of the condition and presence of any security locks installed at the station.

**OPP Capacity Field Verified** - Specifies the flow capacity of the Over Pressure Protection (OPP) device was field verified or tested.

**OPP Devices Lock-Up OK** - Specifies whether the Over Pressure Protection (OPP) device passed the “lock-up” (shut off) test.

**OPP Devices Operated** - Specifies whether the Over Pressure Protection (OPP) device was actually operated during the field inspection or just visually inspected.

**OPP Internals Inspected** - Specifies whether the Over Pressure Protection (OPP) device was dismantled and the condition of its internal components was inspected.

**Paint OK** - Specifies the status of the condition of the paint or atmospheric corrosion protection for the station.

**Regulator Internals Inspected** - Specifies whether the regulator device was dismantled and the condition of its internal components was inspected.

**Regulators Lock-Up OK** - Specifies whether the regulator device passed the “lock-up” (shut off) test.

**Regulators Operated** - Specifies whether the regulator device was actually operated during the field inspection or just visually inspected.

**Signs OK** - Specifies the status of the condition of the warning signs and posted notices for the station.

**Site Protection OK** - Specifies the status of the condition of the site protection for the station. For example, fencing, bollards, or livestock guards.

**Strainers OK** - Specifies the status of the condition of any strainers or filters installed at/on the station.

**Valves OK** - Specifies the status of the condition of the valves for the station.

**Vents OK** - Specifies the condition of the device and enclosure vents for the station.

### *Miscellaneous -*

**Action Completed By** - Specifies who performed the required corrective actions.



**Completion Date** - Specifies the date when any required actions were completed. Enter a value using the following format - MM/DD/YYYY.

**Inspected By** - Specifies who performed the field inspection.

**Inspection Date** - Specifies the date when the field inspection was performed. Enter a value using the following format - MM/DD/YYYY.

**Notes** - Specifies any notes and comments associated with the inspection.

**Other Observations (See NOTES)** - Specifies whether additional observations or comments are included in the Inspection Notes.

**Required Actions** - Specifies any corrective actions that must be taken to bring the station into compliance.

### *Status -*

**Previous Inspection Date** - Specifies the date of the most previous field inspection. Enter a value using the following format - MM/DD/YYYY.

### Calculated Items

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### *Status -*

**Completed Inspection Date** - Displays the date when the most previous field inspection was conducted.

**Inspection Status** - Displays the status of the latest field inspection results for the specified year.

**Required Inspection Date** - Displays the date for the next required field inspection.

### Notes & Considerations

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- Single-clicking in a cell in the Station Record, Run Number, or Stage Number columns will highlight the adjacent row. Double-clicking in a cell in Station Record column will open the default data entry screen.



- Clicking on a cell representing an item name will highlight the column.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Settings Tab

Station Record: 1 Run: 1 Stage: 1 - Sample, Anytown, CO, Sample 1 - Working - 1st Cut, Regulator - Relief Valve

Station Record	Run Number	Stage Number	Upstream Device (Primary)			Upstream Device (Secondary)			Downstream Device (Primary)		
			Initial Setting	Final Setting	Pressure Units	Initial Setting	Final Setting	Pressure Units	Initial Setting	Final Setting	Pressure Units
1	1	1	0.00	0.00	Psi	0.00	0.00	Psi	0.00	0.00	
2	1	1	0.00	0.00	Psi				0.00	0.00	
3	1	1	0.00	0.00	Psi				0.00	0.00	
4	1	1	0.00	0.00	Psi				0.00	0.00	
5	1	1	0.00	0.00	Psi						
6	1	1							0.00	0.00	
7	1	1	0.00	0.00	Psi				0.00	0.00	
8	1	1	0.00	0.00	Psi				0.00	0.00	
		2	0.00	0.00	Psi				0.00	0.00	
9	1	1	0.00	0.00	Psi				0.00	0.00	
	2	1	0.00	0.00	Psi				0.00	0.00	
10	1	1	0.00	0.00	Psi				0.00	0.00	
		2	0.00	0.00	Psi				0.00	0.00	
	2	1	0.00	0.00	Psi				0.00	0.00	

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### Displayed Items

**Run Number** - Refers to the number of the run associated with the displayed data. The item cannot be changed by the User.

**Stage Number** - Refers to the number of the stage associated with the displayed data. The item cannot be changed by the User.

**Station Record** - Refers to the record number of the station associated with the displayed data. The item cannot be changed by the User.

### Data Items

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#### *Downstream & Upstream Device (Primary & Secondary) -*

**Final Setting** - Specifies the final (as left) settings for the associated device at the completion of the inspection. If adjustments are made during the inspection, the value will be different than the initial setting.

**Initial Setting** - Specifies the initial (as found) settings for the associated device at the beginning of the inspection.

#### *Inspection Data -*

**Date** - Specifies the date when the field inspection was performed. Enter a value using the following format - MM/DD/YYYY.

**Performed By** - Specifies who performed the field inspection.

### Calculated Items

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**Pressure Units** - Displays the dimensional units for the associated pressure values.

### Notes & Considerations

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- Single-clicking in a cell in the Station Record, Run Number, or Stage Number columns will highlight the adjacent row. Double-clicking in a cell in Station Record column will open the default data entry screen.
- Clicking on a cell representing an item name will highlight the column.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.



### Equipment Tab

Station Record: 10 Run: 2 Stage: 2 - Sample, Anytown, CO, Sample 10 - Working - 2nd Cut, Regulator - Relief Valve									
Station Record	Run Number	Stage Number	Upstream Device						
			Size/Type Code	Manufacturer	Model	Body Size, Inches	Orifice Size, Inches	Serial Number	Connec
1	1	1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
2	1	1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
3	1	1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
4	1	1	FC 299 3/4	Fisher Controls	299	1-1/2	3/4		Unknow
5	1	1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
6	1	1							
7	1	1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
8	1	1	FC 299 3/4	Fisher Controls	299	1-1/2	3/4		Screwe
		2	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
9	1	1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
	2	1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
10	1	1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
		2	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe
		1	FC 299 1/2	Fisher Controls	299	1-1/2	1/2		Screwe

### Displayed Items

**Run Number** - Refers to the number of the run associated with the displayed data. The item cannot be changed by the User.

**Stage Number** - Refers to the number of the stage associated with the displayed data. The item cannot be changed by the User.

**Station Record** - Refers to the record number of the station associated with the displayed data. The item cannot be changed by the User.

### Data Items

#### Downstream Device -

**Connection Style** - Specifies the end connection style of the device.

**Diaphragm Size** - Specifies the main body diaphragm size of the device.



**Diaphragm Type** - Specifies the main body diaphragm type of the device.

**Maximum Body Pressure** - Specifies the maximum pressure of the device's main body.

**Pressure Units** - Specifies the dimensional units for the associated pressure values.

**Serial Number** - Specifies the serial number of the device.

**Spring Color** - Specifies the color of the main spring used by the device.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the main spring.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the main spring.

**Spring Number** - Specifies the sizing/rating number of the main spring.

### *Downstream Pilot (Primary & Secondary) -*

**Manufacturer** - Specifies the manufacturer's name of the associated pilot regulator.

**Maximum Body Pressure** - Specifies the maximum body rating of the associated pilot regulator.

**Model** - Specifies the model name or number of the associated pilot regulator.

**Pressure Units** - Specifies the dimensional units of the associated pressure values.

**Spring Color** - Specifies the color of the spring used by the associated pilot regulator.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the spring used by the associated pilot regulator.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the spring used by the associated pilot regulator.

**Spring Number** - Specifies the sizing/rating number of the spring used by the associated pilot regulator.

### *Meter Data -*

**Connection Style** - Specifies the type of end connection of the meter.

**Maximum Capacity** - Specifies the maximum capacity of the meter installed at the station. If a meter is installed, enter a value; otherwise, leave the data cell empty.

**Minimum Capacity** - Specifies the minimum capacity of the meter installed at the station. If a meter is installed, enter a value; otherwise, leave the data cell empty.

**Pressure Rating** - Specifies the maximum pressure rating of the meter installed at the station. If a meter is installed, enter a value; otherwise, leave the data cell empty.

**Rating Units** - Specifies the dimensional units used to express the various rating values.

**Size/Type Code** - Specifies the Size/Type Code of the meter (if any) installed at the station.

### *Pressure Recorder Data -*

**High Range** - Specifies the upper limit of the pressure recorder (if any) installed at the station.

**Low Range** - Specifies the lower limit of the pressure recorder (if any) installed at the station.

**Make/Type** - Specifies the manufacturer's name and model or type of the data recorder (if any) installed at the station.

**Range Units** - Specifies the dimensional units used to express the various range values.

### *Upstream Device -*

**Connection Style** - Specifies the end connection style of the device.

**Diaphragm Size** - Specifies the main body diaphragm size of the device.

**Diaphragm Type** - Specifies the main body diaphragm type of the device.

**Maximum Body Pressure** - Specifies the maximum pressure of the device's main body.

**Pressure Units** - Specifies the dimensional units for the associated pressure values.

**Serial Number** - Specifies the serial number of the device.

**Spring Color** - Specifies the color of the main spring used by the device.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the main spring.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the main spring.

**Spring Number** - Specifies the sizing/rating number of the main spring.



### *Upstream Pilot (Primary & Secondary) -*

**Manufacturer** - Specifies the manufacturer's name of the associated pilot regulator.

**Maximum Body Pressure** - Specifies the maximum body rating of the associated pilot regulator.

**Model** - Specifies the model name or number of the associated pilot regulator. To

**Pressure Units** - Specifies the dimensional units of the associated pressure values.

**Spring Color** - Specifies the color of the spring used by the associated pilot regulator.

**Spring Maximum Pressure** - Specifies the maximum pressure rating of the spring used by the associated pilot regulator.

**Spring Minimum Pressure** - Specifies the minimum pressure rating of the spring used by the associated pilot regulator.

**Spring Number** - Specifies the sizing/rating number of the spring used by the associated pilot regulator.

### **Calculated Items**

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*Note* - These values are taken from the associated Property Table for the specified Size/Type Code.

### *Downstream Device -*

**Body Size** - Displays the body size associated with the selected Size/Type Code.

**Manufacturer** - Displays the manufacturer's name associated with the selected Size/Type Code.

**Model** - Displays the model name or number associated with the selected Size/Type Code.

**Orifice Size** - Displays the orifice size associated with the selected Size/Type Code.

**Size/Type Code** - Displays the Size/Type Code of the selected device (for reference only).

### *Upstream Device -*

**Body Size** - Displays the body size associated with the selected Size/Type Code.

**Manufacturer** - Displays the manufacturer's name associated with the selected Size/Type Code.



**Model** - Displays the model name or number associated with the selected Size/Type Code.

**Orifice Size** - Displays the orifice size associated with the selected Size/Type Code.

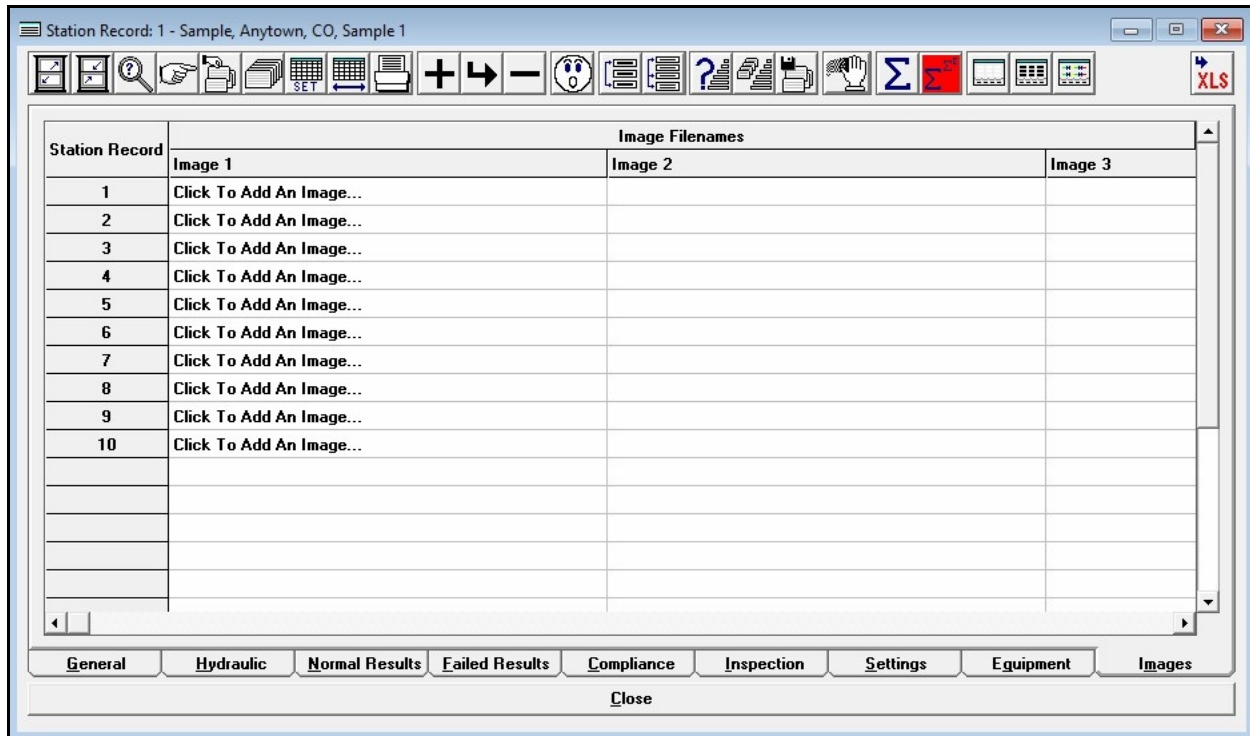
**Size/Type Code** - Displays the Size/Type Code of the selected device (for reference only).

### Notes & Considerations

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- Cells with a white background can be edited by clicking on the cell. Cells with a yellow background color represents items that are calculated. Cells with a grey background are fixed and cannot be changed by the User. Cells with a cyan background represent items that do not apply to the current record.
- Single-clicking in a cell in the Station Record, Run Number, or Stage Number columns will highlight the adjacent row. Double-clicking in a cell in Station Record column will open the default data entry screen.
- Clicking on a cell representing an item name will highlight the column.
- See the *Database Definition* topic in the *Appendix* section for additional information on the data items displayed on this data tab.

### Images Tab



### Displayed Items

**Station Record** - Refers to the record number of the station associated with the displayed data. The item cannot be changed by the User.

### Data Items

**Image Filenames** - If an image is assigned, the filename will be displayed in the associated cell. Click in the associated cell to open the Image Specifications screen to assign a new or additional image to the station. The Image Specifications screen also allows the User to change, view, edit, or unassign the image.

### Notes & Considerations

- Single-clicking in a cell in the Station Record, Run Number, or Stage Number columns will highlight the adjacent row. Double-clicking in a cell in Station Record column will open the default data entry screen.

- Clicking on a cell representing an item name will highlight the column.
- See the *Image Specifications* topic in the *Data Screens* section for more information about working with images.

### Update Specifications

Mass changes can be made to the currently selected station data records. To access this routine, click the *Update Selection Set* icon from the Station Data Report. The Update routine is controlled using the Update Specifications screen. The features associated with the screen are described as follows.



Update Specifications...

Value Setting...

Set...

Equip - Dn Device - Spring Number

Equal To...

Cancel

Restore

Update

### Data Items

**Equal To** - Specifies the new value for the specified Set item. The characteristics of the item change depending on the *Set* value.

**Set** - Specifies the data item to be updated.

### Command Buttons

**Apply** - Closes the screen and applies changes.

**Cancel** - Closes the screen without performing the routine.

**Restore** - Restores the data values that existed just prior to the executed update.

### Notes & Considerations

- The Update routine is similar to the Mass Update routine, except that the Update routine only applies changes to the records in the current selection set. The Mass Update routine can be used to apply changes to records associated with User-specified selection criteria.



# PROPERTY TABLES





### Using Property Tables

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The Property Table Report feature allows redundant pipe data to be included in a common file and helps support the modeling of non-pipe hydraulic features. The Property Tables use relational data management techniques to maintain a relation between the pipe data files and the Property Tables. A Property Table may be thought of as a reference table. Information may be stored in the Property Table and then referenced to or “looked up” based on a common link value (Size/Type Code). The Size/Type Code is used to establish the link between the pipe data files and the Property Tables. The pipe data and the data contained in the Property Tables are said to be “related” by the Size/Type Code. Through this relation, StationManager can access the data found in the Property Tables as needed without storing all of the model-required data in the pipe data files.

Several items in the station database can be linked to a single item in a Property Table. This feature allows redundant data to be stored only once, reducing data storage and entry requirements. This feature also allows mass changes to be made by changing the value one time in the Property Table and automatically changing all of the component features that are related to that particular Property Table and item.

To demonstrate how Property Tables may be used, consider the Pipe Property Table. This Property Table contains information about the dimensional properties of various pipe sizes and types. For each unique Size/Type Code, the Property Table stores the wall thickness, outside diameter, and calculated inside diameter of the pipe. The diameter for a pipe record may be entered as a Size/Type Code value instead of entering the actual inside pipe diameter. For example, the code “2P” (which represents two-inch plastic) may be input for a pipe’s Size/Type (diameter) instead of an actual *Inside Diameter* value of “1.917.” When an actual inside diameter for the pipe is required, the Pipe Property Table will be searched for the Size/Type Code value equal to “2P.” When a match is found, the value of the inside diameter associated with that record is extracted from the Pipe Property Table.

There are several advantages to using the Property Tables to store the dimensional pipe data. First, it eliminates the need for the User to remember the specific values for the various data items in their system. By defining the Property Table using logical codes, like “2P,” to represent a two-inch plastic pipe, the User only needs to remember these easily identified Size/Type Codes. Second, the use of Property Tables helps to ensure the integrity of the model data. By maintaining the pipe sizes in a single location and by selecting the Size/Type Codes from the list when entering data, entry errors may be reduced, and consistent size values may be assured.

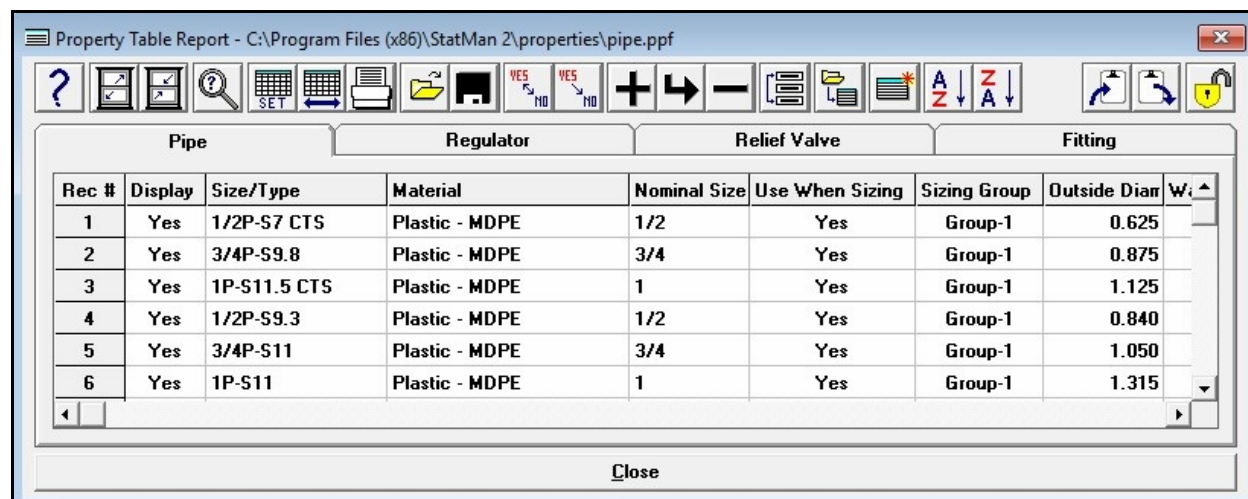
“Standard” Property Tables are included when StationManager is installed. The content of the various Property Tables may be modified as necessary to meet the User’s specific needs. The Property Tables may be revised, added to, or deleted from by the User. When choosing values to be used as the Size/Type Codes for the data items, attempt to choose codes that are short and logical. If you choose codes that are long or hard to understand, you have defeated one of the biggest advantages of using the Property Table features.

To view or edit the contents of the Property Table Report, select the *Property Tables* item from the *Edit* menu. The Property Table Report is displayed. Select the data tab associated with the desired Property Table.

The remainder of this section describes the Property Table Report.

## Property Table Report

The data contained in the various Property Tables may be viewed, printed, and edited using the Property Table Report. The content displayed in the report will change depending on the selected type. The general features associated with the Property Table Report are described in the following sections.



## Displayed Items

**Rec #** - Displays the Record Number of the associated Size/Type Code displayed in the Property Table. The values are used for reference only and cannot be changed by the User.

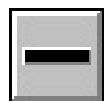
## Icons



**Add Record** - Adds a new record to the end of the current Property Table.



**Copy To Clipboard** - Copies the contents of the Property Table to the Windows clipboard. Once copied, the contents may be pasted into another application.



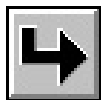
**Delete Record** - Deletes the currently selected (highlighted) record in the current Property Table.



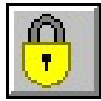
**Find Record** - Finds a station record in the Property Table by the Size/Type Code. When clicked, the Find screen is displayed.



**Insert From Clipboard** - Inserts data from the Windows clipboard. The data will be inserted into the currently displayed Property Table immediately after the currently selected (highlighted) record. The data must be in a tab-delimited format that only contains “data” values and does not include header titles or record numbers. Generally, it is best to insert data that has been previously copied from the Property Table using the *Copy To Clipboard* icon.



**Insert Record** - Inserts a new record just before the currently selected (highlighted) record in the current Property Table.



**Locked Table** - Indicates that the Property Table is locked from editing. Click this icon to “unlock” the table to allow editing. Once clicked, the contents of a previously locked Property Table may be changed.



**Maximize Screen Size** - Increases the Property Table’s size to fill the StationManager display.



**Merge Table** - Merges the contents of another Property Table into the current Property Table. When clicked, a message will be displayed asking whether to insert the new data at the currently selected (highlighted) record location (click the *Yes* command button) or at the end of the Property Table (click the *No* command button) - respond appropriately. The File Selection screen is displayed. Select the name of the desired file, then click the *Continue* command button. A message will be displayed when the process is complete - click the *OK* command button to clear the message.



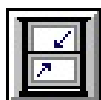
**Move Record** - Moves the currently selected (highlighted) record to a new location in the current Property Table. When clicked, a message will be displayed to select the new location. Click the *OK* command button to clear the message, then select the desired location.



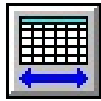
**Open** - Opens a previously saved Property Table file. When clicked, the File Selection screen is displayed.



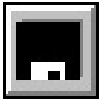
**Print** - Prints the contents of the current Property Table. When clicked, the Print Settings screen is displayed.



**Reset Screen Size** - Sets the Property Table’s size to its “normal” dimensions and position.



**Restore Columns** - Restores the display of all of the columns (data items). When clicked, all of the columns associated with the current Property Table will be displayed.



**Save** - Saves the contents of the current Property Table. When clicked, the File Selection screen is displayed. Once saved, the file may be opened and used with other databases.



**Set Columns** - Used to specify which columns (data items) are displayed in the current Property Table. When clicked, the Columns specification screen is displayed.



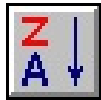
**Set As Current** - Sets the current Property Table as the currently assigned Property Table in the Preference Settings. A message will be displayed when the Property Table has been set. Click the *OK* command button to clear the message.



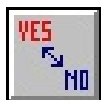
**Show Help** - Displays this Help Reference.



**Sort Ascending** - Sorts the records in ascending order (A to Z or lowest to highest value) based on the values in the highlighted column. *Note* - If the Property Table is saved after the sort has been implemented, the Property Table will be permanently saved in the new order.



**Sort Descending** - Sorts the records in descending order (Z to A or highest to lowest value) based on the values in the highlighted column. *Note* - If the Property Table is saved after the sort has been implemented, the Property Table will be permanently saved in the new order.



**Swap Yes And No** - Swaps all of the “Yes” values in the currently selected (highlighted) column to “No” and all of the “No” values to “Yes.”



**Unlocked Table** - Indicates that the Property Table is unlocked for editing. Click this icon to “lock” the table from editing. Once clicked, the table contents can be viewed; however, the contents cannot be changed until the Property Table is “unlocked.”



**Yes To No** - Changes all of the “Yes” values in the currently selected (highlighted) column from “Yes” to “No.”

## Command Buttons

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**Close** - Closes the Property Table Report.



### Notes & Considerations

- The Property Tables use the Size/Type Code to relate devices and components assigned to the station configuration to the individual items in the associated Property Table. When choosing values to be used for the Size/Type Codes, attempt to choose codes that are short and logical. If codes that are long, hard to remember, or understand are used, one of the biggest advantages of using the Property Table will be defeated.
- When a record or data cell is selected in the report, the “row” associated with the record is highlighted. The highlighted row indicates the location of the “current” record.
- The Property Tables likely contain sizes and models that are not applicable to your situation. Undesired items can be deleted from the table, or their *Display* data item value can be set to “No.” Only sizes and models where the *Display* item is set to “Yes” are included in the data lists used by the various data screens.
- Alternative Property Tables can be created and stored using different file names. The *Property Table* item in the *File* menu can be used to indicate which property to use with the current database.
- The standard files which contain the various Property Tables are described below:

<i>Property Table Type</i>	<i>Filename</i>
Fitting	fitting.fpf
Pipe	pipe.ppf
Regulator	regulator.rpf
Relief Valve	relief.lpf

- The files are normally stored in the “properties” directory of the root StationManager program directory. For example, the files are normally located in the “\Program Files\StatMan 2\properties” directory.
- When changes are saved for a table, a backup file is created just before the changes are saved. The backup file is named the same as the original file; however, it contains an additional “.bak” extension. The previous file contents can be restored by manually copying or renaming the backup file to its original name. The previous backup file is sent to the Windows Recycle Bin.
- Product specifications are stored in a set of subdirectories of the current Property Tables directory/path. Additional specifications can be added by copying the new document to the appropriate directory location.



## Fitting Tab

Rec #	Display	Size/Type Code	Fitting Type	Nominal Size	Equivalent Diameter	Roughness	D, R Units
1	Yes	1/2 L-45 Thd	Elbow	1/2	0.622	0.00070	Inches
2	Yes	1/2 L-90	Elbow	1/2	0.622	0.00070	Inches
3	Yes	1/2 L-90 Thd	Elbow	1/2	0.622	0.00070	Inches
4	Yes	1/2 L-90 SR Thd	Elbow	1/2	0.622	0.00070	Inches
5	Yes	1/2 L-180 Thd	Elbow	1/2	0.622	0.00070	Inches
6	Yes	1/2 Pipe Exit	Other	1/2	0.622	0.00070	Inches

## Data Items

**Description** - Specifies a brief description of the associated fitting. The description can contain up to eighty (80) alphanumeric characters.

**Display** - Specifies whether the associated record will be included in the Size/Type Code selection list when it is displayed. Only items where the value of the *Display* item is set to “Yes” will be displayed in the data lists.

**Diameter, Roughness Units** - Specifies the dimensional units for the equivalent diameter and roughness values.

**Efficiency** - Specifies the efficiency value to be used with the associated fitting. See the following *Notes & Considerations* section for additional information on the use of efficiency in the report.

**Equivalent Diameter** - Specifies the value of the equivalent diameter for the associated fitting. The equivalent diameter represents the inside diameter value that was used as the basis for calculating the equivalent length value.

**Equivalent Length** - Specifies the value of the calculated equivalent length of the associated fitting.

**Fitting Type** - Specifies the common name for the associated fitting. For example, elbow or tee.

**Length Units** - Specifies the dimensional units for the equivalent length values.



**Maximum Pipe ID** - This item is not used by StationManager.

**Minimum Pipe ID** - This item is not used by StationManager.

**Nominal Size** - Specifies the nominal “body” size for the associated fitting.

**Reference** - Specifies the source for the entered information for the associated fitting. The reference can contain up to eighty (80) alphanumeric characters.

**Roughness** - Specifies the value of the inside wall roughness to be used for the associated fitting.

**Size/Type Code** - Specifies the current fitting’s unique Size/Type Code. This item is used to relate the Fitting Property Table to the Station Database. The Size/Type Code can be any group of alphabetic, numeric, or special characters up to twenty (20) characters in length. Use a logical code to identify the value. For example, 2 L-90 might represent a two-inch ninety-degree elbow.

**Sizing Group** - This item is not used by StationManager.

**Sizing Type** - This is not used by StationManager.

**Specification** - Specifies the name of the product specification file (if any) for the associated fitting. The file must be located in the appropriate directory and must be saved in a Portable Document Format (PDF) file. The name of the file can be up to forty (40) alphanumeric characters.

## Notes & Considerations

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- The *Fitting Type* can be used to model any device for which an equivalent length can be calculated. Fittings are modeled as a segment of pipe using the equivalent length item for the pipe’s length and the equivalent diameter item for the pipe’s diameter.
- The equivalent length can be determined from manufacturer tables, from a piping design handbook, or calculated if the flow-pressure relationship is known. Most equivalent lengths are expressed in terms of the length of the standard wall thickness pipe. It is important to know and correctly set the equivalent diameter that is used to calculate the equivalent length.
- The *Efficiency* item from the Property Table is not used in calculation routines. The efficiency values entered in the station run and stage data are used.
- The StationManager 2.1 Property Tables file format is compatible with the Property Table format of our GASCalc 5.0 application. The tables can be shared between the two applications if desired.



## Pipe Tab

Rec #	Display	Size/Type Code	Material	Nominal Size	Use When Sizing	Sizing Group	Outside Diameter	Weight
1	Yes	1/2P-S7 CTS	Plastic - MDPE	1/2	Yes	Group-1	0.625	
2	Yes	3/4P-S9.8	Plastic - MDPE	3/4	Yes	Group-1	0.875	
3	Yes	1P-S11.5 CTS	Plastic - MDPE	1	Yes	Group-1	1.125	
4	Yes	1/2P-S9.3	Plastic - MDPE	1/2	Yes	Group-1	0.840	
5	Yes	3/4P-S11	Plastic - MDPE	3/4	Yes	Group-1	1.050	
6	Yes	1P-S11	Plastic - MDPE	1	Yes	Group-1	1.315	

## Data Items

**Description** - Specifies a brief description of the associated pipe. The description can contain up to eighty (80) alphanumeric characters.

**Display** - Specifies whether the associated pipe record is displayed in the data lists used by the various StationManager data and report screens. Only items where the value of the *Display* item is set to “Yes” will be displayed in the data lists.

**Efficiency** - Specifies the efficiency value to be used with the associated pipe. See the following *Notes & Considerations* section for additional information on the use of efficiency in the report.

**Material** - Specifies the material type or group that the pipe is associated with.

**Nominal Size** - Specifies the nominal size, usually the nominal outside diameter, for the associated pipe.

**Outside Diameter** - Specifies the value of the outside diameter of the associated pipe. If manufacturing tolerances are available, adjust the outside diameter to reflect the smallest possible diameter, as this will result in a conservative inside diameter value.

**Reference** - Specifies the source for the entered information for the associated pipe. The reference can contain up to eighty (80) alphanumeric characters.

**Roughness** - Specifies the value of the inside wall roughness to be used for the associated pipe.

**Size/Type Code** - Specifies the current pipe's unique Size/Type Code. This item is used to relate the Pipe Property Table to the Station Database. The Size/Type Code can be any group of alphabetic, numeric, or special characters up to twenty (20) characters in length. Use a logical code to identify the value. For example, "2P" might represent a two-inch plastic pipe.

**Sizing Group** - This item is not used by StationManager.

**SMYS** - Specifies the Specified Minimum Yield Strength value to be used with the associated pipe. The SMYS value is used for reporting purposes only.

**Specification** - Specifies the name of the product specification file (if any) for the associated pipe. The file must be located in the appropriate directory and must be saved in a Portable Document Format (PDF) file. The name of the file can be up to forty (40) alphanumeric characters.

**Stress Units** - Specifies the value of the dimensional unit associated with the SMYS (Specified Minimum Yield Strength) value.

**T, D, R Units** - Specifies the value of the dimensional units associated with the wall thickness (T), the outside and inside diameters (D), and the roughness values.

**Use When Sizing** - This item is not used by StationManager.

**Wall Thickness** - Specifies the value of the wall thickness of the associated pipe. If manufacturing tolerances are available, the pipe wall thickness should be adjusted so that it reflects the greatest possible thickness, as this results in a conservative inside diameter value.

### Calculated Items

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**Inside Diameter** - Displays the calculated value of the inside diameter of the associated pipe. The value is calculated using the wall thickness and outside diameter values. The User cannot directly modify this item. To change the value of the inside diameter, modify the Wall Thickness or Outside Diameter values.

### Notes & Considerations

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- The *Efficiency* item from the Property Table is not used in calculation routines. The efficiency values entered in the station run and stage data are used.
- If manufacturing tolerances are available, the minimum outside diameter and maximum wall thickness values can be used in the Pipe Property Table to reflect the smallest possible diameter. This value will result in a conservative inside diameter value.

- The StationManager 2.1 Property Tables file format is compatible with the Property Table format of our GASCalc 5.0 application. The tables can be shared between the two applications if desired.

### Regulator Tab

Rec #	Display	Size/Type Code	Manufacturer	Model	Body Size	Orifice Size	Outlet
1	Yes	AM 2003M 1/4	American Meter	2003M	2	1/4	2.067
2	Yes	AM 2003M 3/8	American Meter	2003M	2	3/8	2.067
3	Yes	AM 2003M 1/2	American Meter	2003M	2	1/2	2.067
4	Yes	AM 2003M 5/8	American Meter	2003M	2	5/8	2.067
5	Yes	AM 2003M 3/4	American Meter	2003M	2	3/4	2.067
6	Yes	AM 2003M 7/8	American Meter	2003M	2	7/8	2.067

### Data Items

**Body Size** - Specifies the nominal body size (pipe connection size) of the associated regulator.

**Description** - Specifies a brief description of the associated regulator. The description can contain up to eighty (80) alphanumeric characters.

**Display** - Specifies whether the associated regulator is displayed in the data lists used by the various StationManager data and report screens. Only items where the value of the *Display* item is set to “Yes” will be displayed in the data lists.

**Equation (Control)** - Specifies the flow equation that will be used to describe the regulator’s pressure-flow characteristics under normal control conditions. See the following *Notes & Considerations* section for a complete description of this item.

**Equation (Failed)** - Specifies the flow equation that will be used to describe the regulator’s pressure-flow characteristics under failed conditions. See the following *Notes & Considerations* section for a complete description of this item.

**Failed=Control** - This item is not used by StationManager.

**Manufacturer** - Specifies the name of the manufacturer of the associated regulator.

**Maximum Control Pressure** - Specifies the maximum control (set) pressure of the associated regulator.

**Maximum Inlet Pressure** - Specifies the maximum inlet pressure rating of the associated regulator.

**Minimum Control Pressure** - Specifies the minimum control (set) pressure of the associated regulator.

**Minimum Differential** - Specifies the minimum differential (to achieve full opening) of the associated regulator.

**Model** - Specifies the model name of the associated regulator.

**Orifice Size** - Specifies the size of the valve or orifice of the associated regulator.

**Outlet Diameter** - Specifies the inside diameter of the outlet connection of the regulator body.

**Parameter 1 (Control)** - Specifies the appropriate parameter's value under normal controlling conditions. The definition of this item varies depending on the selected equation. See the following *Notes & Considerations* section for a complete description of this item.

**Parameter 1 (Failed)** - Specifies the appropriate parameter's value under failed conditions. The definition of this item varies depending on the selected equation. See the following *Notes & Considerations* section for a complete description of this item.

**Parameter 2 (Control)** - This item is not used by StationManager.

**Parameter 2 (Failed)** - This item is not used by StationManager.

**Pressure Units** - Specifies the dimensional units for the various pressure values.

**Reference** - Specifies the source for the entered information for the associated regulator. The reference can contain up to eighty (80) alphanumeric characters.

**Size/Type Code** - Specifies the current regulator's unique Size/Type Code. This item is used to relate the Regulator Property Table to the Station Database. The Size/Type Code can be any group of alphabetic, numeric, or special characters up to twenty (20) characters in length. Use a logical code to identify the value. For example, FC 1098EGR 1 could be used to represent a Fisher Controls 1" Model 1098EGR Regulator.

**Size Units** - Specifies the dimensional units for the various size values.

**Sizing Table (Control)** - Specifies the name of a special format file that contains controlling capacity data related to the associated regulator. The file must be located in the Property Tables directory specified in the *Path* settings. The name of the file can be up to forty (40) alphanumeric characters. The file format is described in the following *Notes & Consideration* section. This item is only used when the *Equation (Control)* item is set to "Table."



**Sizing Table (Failed)** - Specifies the name of a special format file that contains failed capacity data related to the associated regulator. The file must be located in the Property Tables directory specified in the *Path* settings. The name of the file can be up to forty (40) alphanumeric characters. The file format is described in the following *Notes & Consideration* section. This item is only used when the *Equation (Failed)* item is set to “Table.”

**Specification** - Specifies the name of the product specification file (if any) for the associated regulator. The file must be located in the appropriate directory and must be saved in a Portable Document Format (PDF) file. The name of the file can be up to forty (40) alphanumeric characters.

**Valve Factor (Control)** - Specifies the published “regulating” valve coefficient of the regulator. See the following *Notes & Considerations* section for a complete description of this item.

**Wide-Open Factor (Failed)** - Specifies the published “wide-open” valve coefficient of the regulator. For some manufacturers, this value is the same as the “regulating” valve coefficient. See the following *Notes & Considerations* section for a complete description of this item.

### Notes & Considerations

- The following table summarizes the available regulator equations and their general application by manufacturer:

<i>Flow Equation</i>	<i>Manufacturer</i>
American	American Meter - Non-rubber element models
American AFV	American - Axial Flow Valve
Equimeter	Same as Rockwell
Fisher	Fisher Controls
Grove 80	Grove - Model 80 Flexflo
Grove 900	Grove - Model 900 & 83
ISA-S75.01	American Meter - Radial Flow Valve Other regulators and control valves meeting the Instrument Society of America - Standard S75.01
Mooney	Mooney Controls
Pietro Fiorentini	Pietro Fiorentini



<i>Flow Equation</i>	<i>Manufacturer</i>
Rockwell	Equimeter Invensys Sensus Sprague Rockwell
Table	None. Use this “equation” to indicate the capacity data is contained in a regulator capacity table. This equation type is not currently supported by StationManager. It is included to maintain compatibility with our other software applications.
Universal	None. Use this equation with older style devices using the original definition for the “universal gas sizing” equation to define their pressure-flow relationship.

- The regulator flow equations are described in the *Appendix* section.
- The definition of the *Parameter 1 (Control/Failed)* item varies depending on the selected flow equation. The following table summarizes the definition of this item based on the various flow equations:

<i>Flow Equation</i>	<i>Parameter 1 Definition</i>
American	Not Used
American AFV	Xt - Critical Flow Factor
Equimeter	Not Used
Fisher	C1 - Valve Recovery Factor
Grove 80	Xt - Critical Flow Factor
Grove 900	Xt - Critical Flow Factor
ISA-S75.01	Xt - Critical Flow Factor
Mooney	C1 - Valve Recovery Factor
Pietro Fiorentini	C1 - Valve Recovery Coefficient
Rockwell	Not Used
Table	Not Used
Universal	C1 - Valve Recovery Coefficient

- The definition of the *Valve Factor (Control)* item varies depending on the make, model, and equation associated with the regulator. The following table summarizes the definition of the value based on each specific flow equation:

<i>Flow Equation</i>	<i>Applicable Coefficient</i>
American	C - Orifice Constant
American AFV	Cv Factor
Equimeter	K Factor - Regulator Constant
Fisher	Cg (Regulating) - Gas Sizing Coefficient
Grove 80	C1 - Critical Flow Factor
Grove 900	Cv - Valve Capacity Factor
ISA-S75.01	Cv - Valve Flow Coefficient
Mooney	Cg (Regulating) - Gas Sizing Coefficient
Pietro Fiorentini	Cg - Gas Sizing Coefficient
Rockwell	K Factor - Regulator Constant
Table	Not Used
Universal	Cv - Liquid Sizing Coefficient

- The value of the *Wide-Open Factor (Failed)* valve coefficient item varies depending on the make, model, and equation associated with the regulator. The following table summarizes the definition of the value based on each specific flow equation:

<i>Flow Equation</i>	<i>Applicable Coefficient</i>
American	C - Orifice Constant
American AFV	Cv Factor
Equimeter	K Factor - Regulator Constant
Fisher	Cg (Wide-Open) - Gas Sizing Coefficient
Grove 80	Cp - Valve Wide Open Capacity Coefficient
Grove 900	Cv - Valve Capacity Factor
ISA-S75.01	Cv - Valve Flow Coefficient

<i>Flow Equation</i>	<i>Applicable Coefficient</i>
Mooney	Cg (Wide-Open) - Gas Sizing Coefficient
Pietro Fiorentini	
Rockwell	K Factor - Regulator Constant
Table	Not Used
Universal	

**Note...** When a separate wide-open valve factor is not published, it is sometimes customary to set the wide-open factor equal to 1.10 times the controlling factor.

- The values of the regulator factors and parameters must be based on an equation whose dimensional units are consistent with the following:

<i>Equation Parameter</i>	<i>Dimensional Units</i>
Volumetric Flow Rate	Cfh
Pressure or Pressure Drop	Psia
Temperature	Rankine

- The StationManager 2.1 Property Tables file format is compatible with the Property Table format of our GASCalc application. The tables can be shared between the two applications if desired.

## Relief Valve Tab

Rec #	Display	Size/Type Code	Manufacturer	Model	Body Size	Diameter, In	Diameter, Out
1	Yes	AG 81 3/4 -8	Anderson-Greenwood	81	3/4	0.825	0.825
2	Yes	AG 81 3/4x1 -4	Anderson-Greenwood	81	3/4	0.825	0.825
3	Yes	AG 81 3/4x1 -6	Anderson-Greenwood	81	3/4	0.825	0.825
4	Yes	AG 81 1 -4	Anderson-Greenwood	81	1	1.049	1.049
5	Yes	AG 81 1 -6	Anderson-Greenwood	81	1	1.049	1.049
6	Yes	AG 81 1 -8	Anderson-Greenwood	81	1	1.049	1.049

## Data Items

**Body Size** - Specifies nominal body size (pipe connection size) of the associated relief valve.

**Description** - Specifies a brief description of the associated relief valve. The description can contain up to eighty (80) alphanumeric characters.

**Diameter, Inlet** - Specifies the inside diameter of the inlet side of the relief valve body.

**Diameter, Outlet** - Specifies the inside diameter of the outlet side of the relief valve body.

**Display** - Specifies whether the associated relief valve is displayed in the data lists used by the various StationManager data and report screens. Only items where the value of the *Display* item is set to “Yes” will be displayed in the data lists.

**Equation** - Specifies the flow equation that will be used to describe the relief valve’s pressure-flow characteristics. See the following *Notes & Considerations* section for a complete description of this item.

**Manufacturer** - Specifies the name of the manufacturer of the associated relief valve.

**Maximum Inlet Pressure** - Specifies the maximum inlet pressure rating of the associated relief valve.

**Maximum Set Pressure** - Specifies the maximum set pressure rating of the associated relief valve.

**Minimum Differential** - Specifies the minimum differential (to achieve full opening) of the associated relief valve.

**Minimum Set Pressure** - Specifies the minimum set pressure rating of the associated relief valve.

**Model** - Specifies the model name of the associated relief valve.

**Orifice Size** - Specifies the size of the valve or orifice of the associated relief valve.

**Orifice Area** - Specifies the cross-sectional area of the valve or orifice of the associated relief valve.

**Parameter 1** - The definition of this item varies depending on the selected equation. See the following *Notes & Considerations* section for a complete description of this item.

**Parameter 2** - This item is not used by StationManager.

**Pressure Units** - Specifies the dimensional units for the various pressure values.

**Reference** - Specifies the source for the entered information for the associated relief valve. The reference can contain up to eighty (80) alphanumeric characters.

**Reset Differential** - Specifies the reset differential of the associated relief valve. See the following *Notes & Considerations* section for a complete description of this item.

**Size/Area Units** - Specifies the dimensional units for the size and area values. Although the actual dimensional units for the size (diameter) and area values are different, the dimensional units for both are taken from the assigned value. For example, if the value is set to “Inches,” the “Inches” unit will be used for the size item, and the “Inches sq” unit will be used for the area item.

**Size/Type Code** - Specifies the current relief valve’s unique Size/Type Code. This item is used to relate the Relief Valve table to the Station Database. The Size/Type Code can be any group of alphabetic, numeric, or special characters up to twenty (20) characters in length. Use a logical code to identify the value. For example, RW 250S 4 4 could be used to represent a Rockwell Model 250S 4-inch body 4-inch orifice relief valve.

**Specification** - Specifies the name of the product specification file (if any) for the associated regulator. The file must be located in the appropriate directory must be saved in a Portable Document Format (PDF) file. The name of the file can be up to forty (40) alphanumeric characters.

**Valve Factor** - Specifies the published valve coefficient for the relief valve. The definition of this item varies depending on the selected flow equation. See the following *Notes & Considerations* section for a complete description of this item.

### Notes & Considerations

- The following table summarizes the available relief valve flow equations and their general application:

<i>Flow Equation</i>	<i>Manufacturer</i>
American AFV	American Meter - Axial Flow Valve
API 520	Anderson-Greenwood Mercer Taylor Tool Other relief valves meeting the American Petroleum Institute Specification 520
ASME BPV	Relief valves meeting the American Society Of Engineers Boiler & Pressure Vessel specification
Equimeter	Same as Rockwell
Fisher	Fisher Controls
ISA-S75.01	American Meter - Radial Flow Valve Other relief valves and control valves meeting the Instrument Society of America - Standard S75.01
Mooney	Mooney Controls
Rockwell	Equimeter Invensys Sensus Rockwell

- The definition of the *Parameter 1* item varies depending on the selected flow equation. The following table summarizes the definition of this item based on the various flow equations:

<i>Flow Equation</i>	<i>Parameter 1 Definition</i>
American AFV	Xt - Critical Flow Factor
API 520	Kb - Capacity Correction Factor
ASME BPV	Kb - Capacity Correction Factor
Equimeter	Not Used
Fisher	C1 - Valve Recovery Factor

<i>Flow Equation</i>	<i>Parameter 1 Definition</i>
ISA- S75.01	Xt - Critical Flow Factor
Mooney	C1 - Valve Recovery Factor
Rockwell	Not Used

- The relief valve flow equations are described in the *Appendix* section.
- The definition of the *Valve Factor* item varies depending on the selected flow equation. The following table summarizes the applicable values based on each specific flow equation:

<i>Flow Equation</i>	<i>Applicable Coefficient</i>
American AFV	Cv Factor
API 520	Not Used
ASME BPV	Kd - Discharge Coefficient
Equimeter	K Factor - Regulator Constant
Fisher	Cg - Capacity Sizing Factor
ISA-S75.01	Cv - Valve Flow Coefficient
Mooney	Cg - Capacity Sizing Factor
Rockwell	K Factor - Regulator Constant

- The values of the relief valve factors and parameters must be based on an equation whose dimensional units are consistent with the following:

<i>Equation Parameter</i>	<i>Dimensional Units</i>
Volumetric Flow Rate	Cfh
Pressure or Pressure Drop	Psia
Temperature	Rankine

- The StationManager 2.1 Property Tables file format is compatible with the Property Table format of our GASCalc application. The tables can be shared between the two applications if desired.





# IMPORT & MERGE ROUTINES



# StationManager™ 2.1 *Import & Merge Routines*

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# StationManager™ 2.1 *Import & Merge Routines*

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## Import & Merge Routines

This section provides descriptions and requirements for importing and merging data from the various supported file formats. The additional data screens used to further define the import and merge specifications will be described later in this section.

StationManager provides translation routines for importing and merging associated with several types of file formats. Using the Import/Merge routine, data contained in database files and spreadsheet files may be used with StationManager. The following table describes the Import and Merge *File Types* supported by StationManager.

File Type	Supports	
	<i>Import</i>	<i>Merge</i>
dBase 3 Database	X	
dBase 4 Database	X	
GASCalc 5.0 - Monitor Regulator Station	X	X
GASCalc 5.0 - Regulator/Relief Valve Station	X	X
GASCalc 5.0 - Regulator/Relief 2 Stage Station	X	X
GasValve Database	X	
Microsoft Access Database	X	
Microsoft Excel 8.0 & 97 Workbook	X	

When importing data files, ensure that the data values and dimensional units contained in the Source file are compatible with the values supported by StationManager. When importing or merging a file, the file to be imported is referred to as the “Source” file, and the StationManager database being imported into is referred to as the “Target” file. When exporting a file, the StationManager database to be exported is referred to as the “Source” file, and the file being created is referred to as the “Target” file.

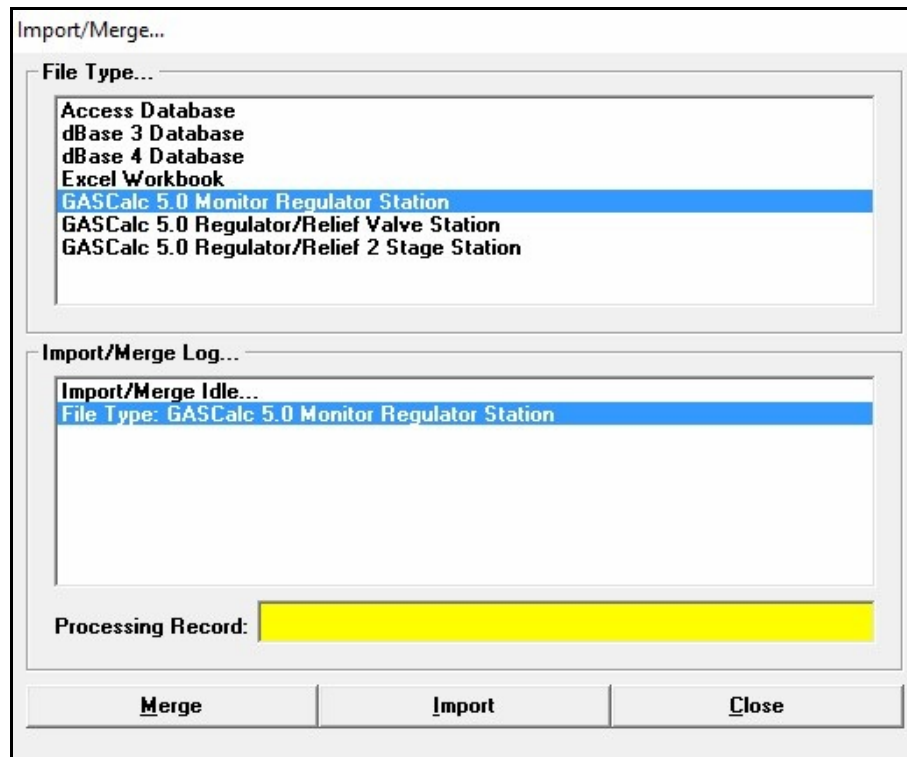
The import (source) file does not need to be completely inclusive. Items not included in the file will be set to applicable default values and may be revised after the import is complete using the Mass Update or data edit routines. The default values can be set before importing a file using the *Set Defaults Values* item from the *Utilities* menu.

The Import and Merge routines are accessed through the *Import/Merge* item of the *Utilities* menu. When selected, the Import/Merge screen is displayed. The features associated with the screen are described as follows.

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## Import/Merge Screen



### Displayed Items

**Import/Merge Log** - Displays the activity (status) of the Import/Merge routine.

**Processing Record** - Displays the number of the record or line currently being processed or the number of records that were processed when completed.

### Data Items

**File Type** - Displays the type of file to be processed.

### Command Buttons

**Cancel/Close** - The function and caption of this command button vary depending on the current activity and status of the translation routine. When “Close” is displayed, it closes the Import/Merge screen. When “Cancel” is displayed, it closes the translation activity.



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**Import** - Starts the Import routine. When clicked, the File Selection is displayed.

**Merge** - Starts the Merge routine. When clicked, the File Selection is displayed.

## Notes & Considerations

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- The features associated with the File Selection screen are described in the *Data Screens* section.
- Selecting certain file types may cause an additional option or data screen to be displayed. These screens allow additional translation specifications to be defined. These screens are discussed later in this section.
- The Merge routine allows a file to be merged with the currently open StationManager file. For certain file formats, when using the Merge routine, the import (source) file is compared to the StationManager (target) file. Where matching records are found, only the defined data fields are updated. If a matching record is not found in the target file, a new record is added to the StationManager file.
- The Import routine creates a new set of StationManager database files. If existing database files are present, they will be sent to the Windows Recycle Bin before the Import routine is executed.
- When importing data to create a new StationManager database. Default, zero (0), or empty values are assigned to data items that are not assigned in the import specification. Data items that are assigned in the import specification are assigned the associated values found in the source file.
- Certain file types are only supported by certain import and merge processes. When a file type is selected from the *File Type* list, the command buttons will be enabled or disabled depending on what process is supported for that file type.
- Files that are opened by another application, like a database or spreadsheet application, cannot be processed by the Import or Export routines until they are closed by the outside application.



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## Import Specifications

When importing certain format files, StationManager requires the User to assign data fields found in the Source database or file to data items in the Target (StationManager) database. The Import Specifications screen is used to make the assignments. The features associated with the screen are described as follows.

Data Item...	Assigned Database Field...
District	Site_ID_NO
City/Town	
State	
Legal Description	
Station Identification	
Area/Description	STATE
Location	
Operating Status	
Capacity - Maximum Required	
Capacity - Minimum Required	

## Data Items

**Data Table Name** - Specifies which table or worksheet to use for the Source data. Some databases and data files contain multiple data tables or worksheets.

### *Data Field Assignments -*

**Assigned Database Field** - Specifies the Source data fields assigned to the associated Target data item.

**Data Item** - Specifies the StationManager data items.

## Command Buttons

**Cancel** - Closes the screen without performing the routine.



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**Clear Assignments** - Clears all of the data items and field assignments.

**Continue** - Proceeds with the Import routine.

**Print** - Displays the Print Settings screen to print the data items and field assignments.

## **Notes & Considerations**

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- The import files may contain data not necessarily related to the station configuration. Not all data items or data fields are required to be assigned.
- When using the Merge routine, the specified link item or items must be assigned to an appropriate data field.
- The item and field name assignments are saved when the specification screen is closed. The next time the screen is displayed, the previous assignments are displayed. Use the *Clear Specifications* command button to clear the previous assignments.



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## **Import Access Databases**

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A database saved in Microsoft Access format (.mdb) may be imported to create a StationManager database. When importing a file in this format, StationManager requires the User to assign data fields found in the Source (Access) database to data items in the Target (StationManager) database. The Import Specifications screen is used to make the assignments. See the *Import Specifications* topic in the *Import & Merge Routines* section for additional information on making the required assignments.

StationManager expects the Source file to be in Microsoft Access 97 format. Other version Access files and files created by other compatible applications may also be acceptable.





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## **Import dBase Format Files**

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When importing a dBase format file, StationManager requires the User to assign data fields found in the Source (dBase) database to data items in the Target (StationManager) database. The Import Specifications screen is used to make the assignments. See the *Import Specifications* topic in the *Import & Merge Routines* section for additional information on making the required assignments.

Depending on the selected File Type, StationManager expects the Source file to be a dBase III (3.0), III (3.0) Plus, or IV (4.0) format; however, other version dBase files and files created by other dBase compatible applications may also be acceptable.



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## **Import GASCalc Calculation Files**

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Certain types of GASCalc calculation files can be imported or merged as “runs and stations” into a StationManager database. The GASCalc file version must match the selected “file type.” Once the appropriate Source and Target files are selected, no additional specification or assignment is required to import the calculation files.



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## Import A GasValve Database

GasValve is a dBase application that was used to create station databases similar to StationManager. The application was originally developed and marketed by People's Natural Gas of Council Bluffs, Iowa. It was later supported by ENERGROUP an affiliate of People's Natural Gas. It was a popular application, and many pipeline and utility companies created databases using the application. ENERGROUP discontinued business operations around 1991, and the GasValve program has not been commercially supported since that time.

Most GasValve databases can be imported to create a StationManager database. Because different versions of the GasValve application existed over time, and not all permutations are known, some version files may have issues during the import process.

A GasValve database consists of up to eight dBase files, which are identified by special names. The files are linked using various key fields contained in the data files. At a minimum, the following files must exist for the Import routine to be successful.

header.dbf  
piping.dbf  
reg\_info.dbf  
rel\_info.dbf

To import a GasValve database, select the *Import GasValve File* item from the *Utilities* menu. A File Selection screen is displayed. Select the appropriate Source and Target locations, enter the desired StationManager database name, and then click the *Continue* command button. A message will be displayed when the import process is complete. Click the *OK* command button to clear the message.

The File Selection screen for the Gas Valve import is described earlier in this section.

## Default Values

The following values and dimensional units are assumed to apply to the data contained in the GasValve database.

<i>Item</i>	<i>Default/Assumed Value</i>
Base Pressure	14.73 Psia
Base Temperature	60 Fahrenheit
Viscosity	0.000007 Lbm/Ft-Sec
Specific Heat Ratio	1.3

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<i>Item</i>	<i>Default/Assumed Value</i>
Pipe Flow Efficiency	100 Percent
Pipe Flow Equation	IGT - Improved
Flow Units	Mcfh
Pressure Units	Psig
Length Units	Feet
Diameter Units	Inches
Temperature Units	Fahrenheit

## Known Issues

Some issues that have been discovered when importing a GasValve database include:

- Pipe sizes in GasValve are stored as an actual inside diameter value. After being imported into StationManager, they need to be converted to a pipe Size/Type Code. This can be done using the Mass Update routine.
- GasValve did not use a Size/Type Code to specify assigned regulators and relief valves. When processing the file, the Import routine derives a Size/Type Code by combining values from several data fields. Generally, the derived Size/Type Codes do not correspond to the existing Size/Type Codes in StationManager. Once imported, the derived Size/Type Codes can be added to the StationManager Property Tables or the Mass Update routine can be used to change derived Size/Type Codes to StationManager Size/Type Codes, or the Size/Type Codes in the StationManager Property Tables can be changed to match the derived/imported Size/Type Codes.
- Often similar but different Size/Type Codes are derived during the import process, all referring to the same make, model, and size of the device. It is best to manually correct or use the Mass Update routine to change the Size/Type Codes to a consistent value.
- In addition to pipe lengths, GasValve stored equivalent diameter and length values for various piping segments. When encountered, the values are added as an additional component to the appropriate piping component list.
- GasValve did not consistently maintain information on the intermediate piping. It appears that intermediate piping may have only been stored or required for stations with relief valves assigned to them. When intermediate piping values are not available, default values are assigned in StationManager.

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- GasValve was apparently lenient in the assignment of piping data. It appears that various pipe segment data could be unassigned and that the database and calculations were still functional. Depending on preference settings in StationManager, it may require that all of its hydraulic data items be assigned a value. In cases where associated data values are not assigned in GasValve, the Import routine will assign default values as previously defined in StationManager. The *Allow Empty Components List* in the preference settings can be selected to allow empty components lists; this is sometimes useful when dealing with an imported GasValve database.
- Several versions of GasValve were produced. In general, StationManager supports all of the data fields that were included in the last version of GasValve. Some data items included in StationManager were not included in GasValve. For example, the intermediate piping item found in StationManager was not included in the GasValve database. Values for unsupported items are either set to default values, left blank or empty, or the Import routine attempts to “derive” a value for the item based on other information found in the GasValve database.
- It was common practice to try to “trick” GasValve into handling configurations and makes and models of regulators and relief valves that it not normally handle. These tricks may or may not be translated by StationManager correctly. Upon completion of the import process, these special cases may require particular revision in StationManager.
- Passive monitor stations contained in GasValve are assumed to be upstream monitor type configurations and are imported as such, except where the downstream set pressure is greater than the upstream set pressure; in those cases, the station is assumed to be a downstream monitor configuration. If this is not the case, the stage style for the affected stations can be changed in StationManager after the import is complete.
- GasValve allowed more than two runs in a station. When three runs are encountered, the import process assigns two runs to one station, then creates an additional station and assigns the third and fourth runs to it. Up to four runs are handled by the import routine.
- If the “rating” item for a regulator or relief valve is assigned to a non-number value in the GasValve database, the value is set to 0 during the import.
- The default dimensional units should be set to appropriate values before performing the import.



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## Data Assignments

<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
<b>header.dbf</b>		
DISTRICT	District Identification	Combined with other fields to create a unique identification number to link with the other data files.
TOWN	City/Town	Combined with other fields to create a unique identification number to link with the other data files.
DRS_NO	Station Identification	Combined with other fields to create a unique identification number to link with the other data files.
AREA	Station Description	
STATE	State	
LOCATION	Location	
TYPE	Not directly assigned. Used to determine station style, device types, and number of stages.	SR = Single stage with relief valve DR = Two stage with relief valve WM = Single stage upstream working monitor PM = Single stage upstream monitor Other codes = Single stage upstream monitor
NO_RUNS	Number of Runs	
TBS_CAP	Maximum Meter Capacity	
MAX_FLOW	Maximum Required Capacity	
ATM_PRESS	Indirectly assigned to the Elevation item	The value is used to calculate a corresponding elevation value. The resulting value is assigned to the Elevation item.
GAS_TEMP	Flowing Temperature	



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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
SP_GRAV	Specific Gravity	
MAOP_IN	Upstream MAOP	
MAOP_INT	Intermediate MAOP	
MAOP_OUT	Downstream MAOP	
PR_MANU	Pressure Recorder Make/Type	Concatenated with the PR_TYPE to create the assigned value.
PR_TYPE	Pressure Recorder Make/Type	Concatenated with the PR_MANU to create the assigned value.
PR_RANGE	Indirectly assigned to the Pressure Recorder Low and High Range items	The value is parsed and assigned to the appropriate data items.
PERSON1	Designed By	
HDATE1	Design Date	
PERSON2	Entered/Revised By	
HDATE2	Entry/Revision Date	
REMARKS	Comments/Notes	In General Station Data
<b>pipring.dbf</b>		
DISTRICT	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
TOWN	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
DRS_NO	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
LENGTH1	Upstream component piping length	Combined with associated diameter to create an individual component.



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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
DIAMETER1	Upstream component piping diameter	Combined with associated length to create an individual component.
LENGTH2	Upstream component piping length	Combined with associated diameter to create an individual component.
DIAMETER2	Upstream component piping diameter	Combined with associated length to create an individual component.
LENGTH3	Upstream component piping length	Combined with associated diameter to create an individual component.
DIAMETER3	Upstream component piping diameter	Combined with associated length to create an individual component.
LENGTH4	Upstream component piping length	Combined with associated diameter to create an individual component.
DIAMETER4	Upstream component piping diameter	Combined with associated length to create an individual component.
LENGTH5	Upstream component piping length	Combined with associated diameter to create an individual component.
DIAMETER5	Upstream component piping diameter	Combined with associated length to create an individual component.
IN_EQ_LE	Upstream component piping length	Combined with associated diameter to create an individual component.
OUT_EQ_LE	Downstream component piping length	Combined with associated diameter to create an individual component.
IN_EQ_DI	Upstream component piping diameter	Combined with associated length to create an individual component.
OUT_EQ_DI	Downstream component piping diameter	Combined with associated length to create an individual component.
IN_VEL	Not assigned	
OUT_VEL	Not assigned	
IN_PDROP	Not assigned	
OUT_PDROP	Not assigned	





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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
T_EQ_LEN	Not assigned	
T_EQ_DIA	Not assigned	
NOTES	Comments/Notes	Added to the General Station Comments/Notes
<b>reg_info.dbf</b>		
DISTRICT	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
TOWN	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
DRS_NO	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
RUN_NO	Not assigned	Used to determine which run to assign the data to.
REG_NO	Not assigned	Used to determine which run to assign the data to.
REG_MAKE	Not directly assigned	Combine with other fields to create a Size/Type Code for the device.
REG_TYPE	Not directly assigned	Combine with other fields to create a Size/Type Code for the device.
REG_BODY	Not directly assigned	Combine with other fields to create a Size/Type Code for the device.
REG_ORIF	Not directly assigned	Combine with other fields to create a Size/Type Code for the device.
REG_CONN	Device Equipment Connection	
REG_RATING	Device Pressure Rating	
RG_MAXPR	Maximum Inlet Pressure	



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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
RG_MINPR	Minimum Inlet Pressure	
RG_SETPR	Device Set Pressure	
RG_MAXCAP	Not assigned	
RG_MINCAP	Not assigned	
RG_FLDCAP	Not assigned	
RG_SYSCAP	Not assigned	
RG_RGBU	Not assigned	
RG_PLTSPR	Primary Pilot Spring Number	
RG_PLTCLR	Primary Pilot Spring Color	
RG_PLTRNG	Primary Pilot Spring Minimum and Maximum Pressure Ratings	The value is parsed and assigned to the appropriate data items.
RG_MNBSPR	Device Spring Number	
RG_MNBCLR	Device Spring Color	
RG_MNBRNG	Device Spring Minimum and Maximum Pressure Ratings	The value is parsed and assigned to the appropriate data items.
RG_PSMDL	Primary Pilot Model	
RG_PSSET	Set Pressure	Only assigned if the value of RG_SETPR equal 0
RG_MPMDL	Secondary Pilot Model	
RG_MPSET	Monitor Set Pressure	
RG_MPSPR	Secondary Pilot Spring Number	
RG_MPCLR	Secondary Pilot Spring Color	



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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
RG_MPRNG	Secondary Pilot Spring Minimum and Maximum Pressure Ratings	The value is parsed and assigned to the appropriate data items.
RG_NOTES	Comments/Notes	Added to the General Station Comments/Notes
<b>rel_data.dbf</b>		
DISTRICT	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
TOWN	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
DRS_NO	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
RUN_NO	Not assigned	Used to determine which run to assign the data to.
REL_NO	Not assigned	Used to determine which stage to assign the data to.
REL_MAKE	Not directly assigned	Combine with other fields to create a Size/Type Code for the device.
REL_TYPE	Not directly assigned	Combine with other fields to create a Size/Type Code for the device.
REL_BODY	Not directly assigned	Combine with other fields to create a Size/Type Code for the device.
REL_ORIF	Not directly assigned	Combine with other fields to create a Size/Type Code for the device.
REL_CONN	Downstream Device Connection Type	
REL_RATNG	Downstream Device Pressure Rating	



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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
REL_LOC	Not Assigned	
RL_SETPR	Downstream Device Set Pressure	
RL_RBUPR	Not assigned	
RL_RBUCAP	Not assigned	
RL_PBUPR	Not assigned	
RL_TBUPR	Not assigned	
RL_PBU2R	Not assigned	
RL_TBU2R	Not assigned	
RL_MAXPR	Not assigned	
RL_VLVIN	Not assigned	
RL_VLVOUT	Not assigned	
RL_VLVCAP	Not assigned	
RL_SYSCAP	Not assigned	
RL_SYSCP2R	Not assigned	
RL_RGBU	Not assigned	
RL_SBCAP2R	Not assigned	
RL_PROPR	Not assigned	
RL_PROP2RL	Not assigned	
RL_SUBCAP	Not assigned	
RL_REASN1	Not assigned	
RL_REASN2	Not assigned	
RL_PLTSPR	Downstream Primary Pilot Spring Number	
RL_PLTCLR	Downstream Primary Pilot Spring Color	



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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
RL_PLTRNG	Downstream Primary Pilot Spring Minimum and Maximum Pressure Ratings	The value is parsed and assigned to the appropriate data items.
RL_MNBSPR	Downstream Device Spring Number	
RL_MNBCLR	Downstream Device Spring Color	
RL_MNBRNG	Downstream Device Spring Minimum and Maximum Pressure Ratings	The value is parsed and assigned to the appropriate data items.
RL_INLEN	Intermediate component piping length	Combined with associated diameter to create an individual component.
RL_INDIA	Intermediate component piping diameter	Combined with associated length to create an individual component.
RL_OUTLEN	Stack component piping length	Combined with associated diameter to create an individual component.
RL_OUTDIA	Stack component piping diameter	Combined with associated length to create an individual component.
RL_UPLEN	Upstream component piping length	Combined with associated diameter to create an individual component.
RL_UPDIA	Upstream component piping diameter	Combined with associated length to create an individual component.
RL_NOTES	Comments/Notes	Added to the General Station Comments/Notes



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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
<b>inspect.dbf</b>		
DISTRICT	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
TOWN	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
DRS_NO	Not assigned	Combined with other fields to create a unique identification number to link with the other data files.
INSP1A	Enclosures OK	
INSP2A	Paint OK	
INSP3A	Site Protection OK	
INSP4A	Signs OK	
INSP5A	Vents OK	
INSP6A	Strainers OK	
INSP7A	Valves OK	
INSP8A	Locks OK	
INSP9A	Regulators Operated	
INSP10A	Regulators Lock-Up OK	
INSP11A	Reg Internals Inspected	
INSP12A	OPP Devices Operated	
INSP13A	OPP Devices Lock-Up OK	
INSP14A	OPP Internals Inspected	
INSP15A	OPP Capacity Field Verified	
INSP16A	Data Recorders OK	



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<i>GasValve Data Field Name</i>	<i>StationManager Data Item</i>	<i>Notes</i>
RG11IA	Not assigned	
RG11FA	Not assigned	
RG12IA	Not assigned	
RG22FA	Not assigned	
RL11IA	Not assigned	
RL11FA	Not assigned	
RL12IA	Not assigned	
RL12FA	Not assigned	
RG21IA	Not assigned	
RG21FA	Not assigned	
RG22IA	Not assigned	
RG22FA	Not assigned	
RL21IA	Not assigned	
RL21FA	Not assigned	
RL22IA	Not assigned	
RL22FA	Not assigned	
INSPNAMEA	Inspected By	
INSPDATEA	Inspection Date	
NOTE1A	Inspection Notes	
NOTE2A	Not assigned	
CAUSE1	Not assigned	
CAUSE2	Not assigned	
INSPDATEB	Previous Inspection Date	
<i>Note</i> - GasValve allowed the storage of data for multiple inspection years. These values are stored in additional data fields that are not listed. StationManager only supports the listed data fields as indicated.		



# StationManager™ 2.1 *Import & Merge Routines*

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## **Import Excel 5.0 & 95, 8.0 & 97 Workbook Format Files**

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When importing this format file, StationManager requires the User to assign data fields found in the Source (Excel) file to data items in the Target (StationManager) database. The Import Specifications screen is used to make the assignments. See the *Import Specifications* topic in the *Import & Merge Routines* section for additional information on making the required assignments.

StationManager expects the Source file to be in one of the listed Microsoft Excel Workbook formats. Files created by other compatible applications may also be acceptable.

Generally, the StationManager formats apply to the following files:

**Excel 5.0 & 95** - Excel “5.0” format files, or files created using Microsoft Excel 5-7, and/or Excel 95

**Excel 8.0 & 97** - Excel “8.0” format files, or files created using Microsoft Excel 97 - 2002

When importing a workbook that contains more than one worksheet to the Data Table item, assign the worksheet name that contains the desired data values.





# EXPORT ROUTINES





### Export Routine

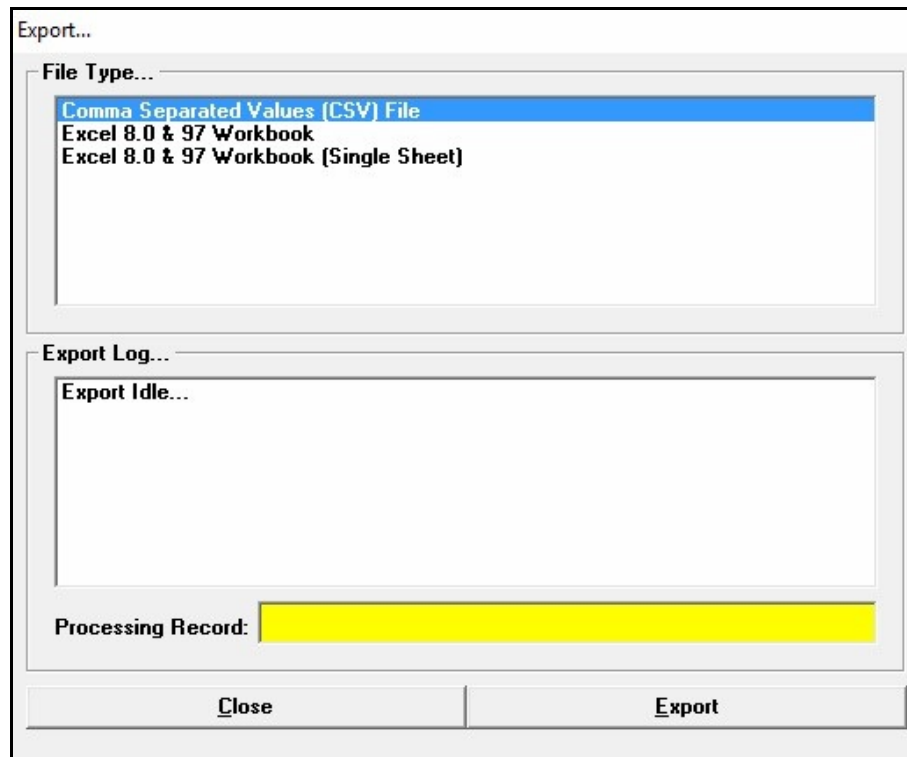
This section provides descriptions and requirements for exporting data from StationManager into a supported file format. The additional data screens used to further define the export specifications will be described later in this section.

StationManager provides translation routines for exporting data associated with several types of file formats. Using the Export routines, data contained in database files and spreadsheet files may be used with StationManager. The following table describes the Export *File Types* supported by StationManager.

<i>File Type</i>
Common Separated Value (CSV) Text File
Microsoft Excel 8.0 & 97 Workbook

The Export routine is accessed by selecting the *Export* item in the *Utilities* menu. When selected, the Export screen is displayed. The features associated with the Export screen, along with the specific requirements associated with each supported file type, are described in the following sections.

### Export Screen



#### Displayed Items

**Export Log** - Displays the activity (status) of the Export routine.

**Processing Record** - Displays the number of the record or line that is currently being processed or the number of the records that were processed when completed.

#### Data Items

**File Type** - Displays the available file types that may be exported.

#### Command Buttons

**Cancel/Close** - The function and caption of this command button varies depending on the current activity and status of the translation routine. When “Close” is displayed, it closes the Export screen. When “Cancel” is displayed, it cancels the translation activity.

**Export** - Begins the Export routine. When clicked, the File Selection screen is displayed.

### **Notes & Considerations**

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- The features associated with the File Selection screen are described in the *Data Screens* section.
- Selecting certain file types may cause an additional option or data screen to be displayed. These screens allow additional translation specifications to be defined. These screens are discussed later in this section.
- The Export routine creates a new set of files in the specified format. It does not change the format or content of the StationManager database data files.

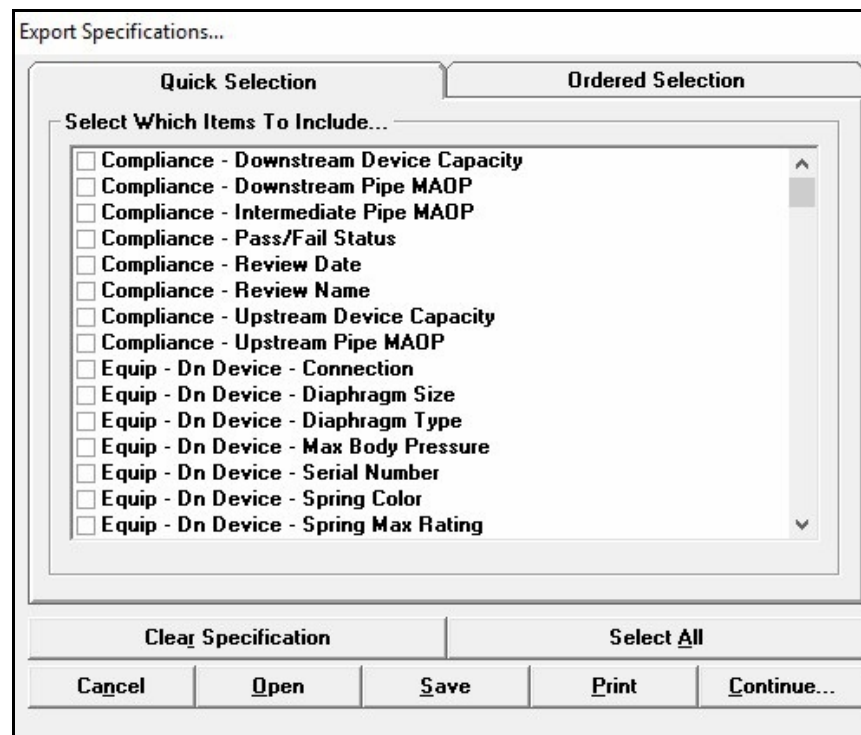
### Export Specifications

When exporting certain format files, StationManager requires the User to indicate which data items to include in the exported file. The Export Specifications screen is used to make the assignments.

Two methods are available for creating the export specification. The Quick method allows items to be selected from an item list - the items are exported in the order shown in the list. The Ordered method allows items to be selected and their output order to be specified by the User. The specification method associated with the currently displayed specification data tab is used to create the exported file.

The features associated with the screen are described as follows.

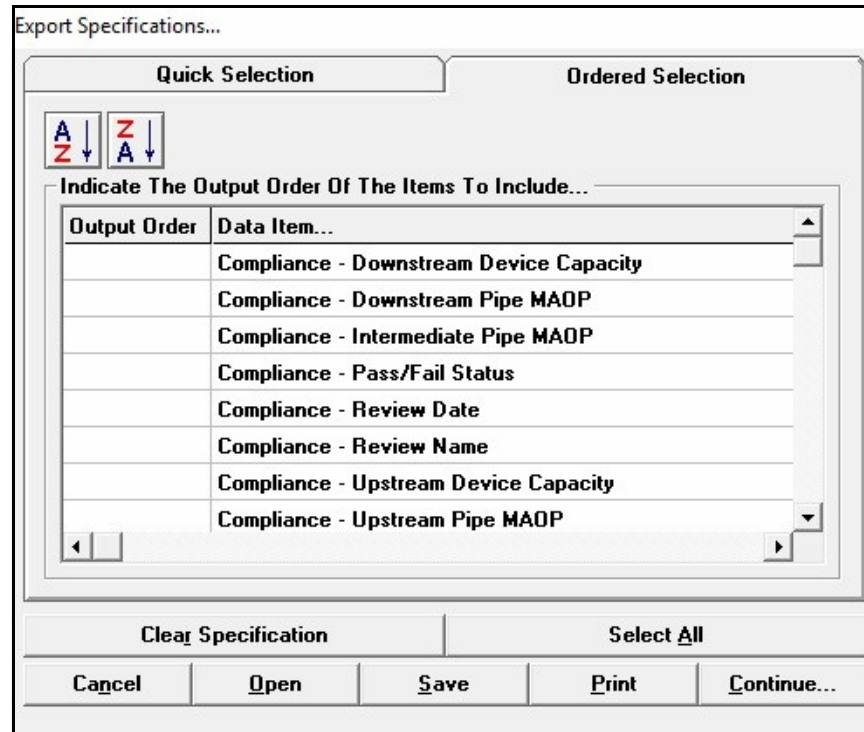
### Quick Selection Tab



### Data Items

**Select Which Items To Include** - When selected, the data items in the StationManager database are included in the exported file.

### Ordered Selection Tab



### Data Items

**Data Item** - Specifies the various data items found in the StationManager database.

**Output Order** - Specifies the output order of the associated data items. Items with no (empty) assignment will not be included in the export file.

### Icons



**Sort Ascending** - Sorts the records in ascending order (A to Z or lowest to highest value) based on the Output Order values.



**Sort Descending** - Sorts the records in descending order (Z to A or highest to lowest value) based on the Output Order values.

### Command Buttons

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**Cancel** - Closes the screen without proceeding with the Export routine.

**Clear Specification** - Clears all of the data item selections for the currently displayed data tab.

**Continue** - Proceeds with the Export routine.

**Open** - Opens a previously saved export specification.

**Print** - Displays the Print Settings screen to print the contents of the currently displayed specification data tab.

**Save** - Saves the contents of the current export specification.

**Select All** - Selects all of the items in the StationManager database for inclusion in the exported file.

### Notes & Considerations

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- A StationManager database contains a large number of data items. Generally, not all of these items are required or desired to be included in the exported file. To make the exported file more manageable, it is suggested that only the minimum required or desired items be included in the exported file.
- See the individual export topics for more information about the export process and results.
- The item selections are saved when the specification screen is closed. The next time the screen is displayed, the previous selections are displayed. Use the *Clear Specification* command button to clear the previous selections.
- The values assigned in the output order item indicate the order in which the associated data item will listed in the export file. If a new item needs to be inserted in an existing specification, assign the desired location value (even if it is already assigned); the order values for items from that location will automatically be renumbered.
- Gaps may exist in the output order values; for example, it is acceptable to only have values assigned like 1, 2, 5, 6.



### **Export Microsoft Excel Files**

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StationManager provides a routine for creating Microsoft Excel spreadsheet files from a StationManager database.

When exporting to an Excel 5.0 or 8.0 Workbook, a single workbook (.xls extension) with multiple worksheets will be created. The file may be opened and manipulated using any application that supports the Excel 5.0 or 8.0 Workbook format. The content of the exported file will vary depending on which items were selected for inclusion in the Import Specifications. The data items are grouped by general subject; for example, general station information is grouped together, hydraulic data is grouped together, etc. If items from more than one group are included, they will be grouped by subject on individual worksheets within the workbook.

When using the XLS export routine (icon) from the Station Data Report screen, a single sheet workbook is created.



# APPENDIX



## Calculation Method

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StationManager uses several methods to calculate the flows and pressures for a station's piping and devices. The method used depends on the operating conditions and station configuration. The various methods are described on the following pages.

## General Calculation Methods

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### Normal Conditions

---

In general, the calculation of flows and pressures through the station piping and devices under normal conditions is a straightforward hydraulic pressure drop calculation. The minimum inlet pressure is used as the supply pressure to the upstream piping. The maximum downstream flow is used as the flow rate through the station. All devices are assumed to be operating normally - that is, it is assumed that monitor regulators are in a wide open position, relief valves are in a closed position, and controlling regulators are in some intermediate position and controlling at their respective set pressures.

The calculation method involves calculating the pressure drop across each piping section and device. A calculation error will occur if the minimum operating pressures cannot be maintained. For example, if the inlet pressure to a regulator is not sufficient to maintain the set pressure, either for capacity or minimum differential pressure reasons, an error is generated during the calculation.

### Failed Conditions

---

In general, the calculation of flows and pressures through the station piping and devices under failed conditions requires a trial-and-error solution method. The maximum inlet pressure is used as the supply pressure to the upstream piping; for stations containing a relief valve, the flow through the station is equal to the summation of the minimum downstream flow and the flow rate through the relief device and stack; for stations containing a monitor regulator, the flow through the station is equal to the maximum required downstream flow. All control devices are assumed to be failed wide open, monitor devices are assumed to be controlled at their respective set pressures, and relief devices are assumed to be operating in a wide open position.

For configurations containing a relief valve, the general calculation method involves assuming an initial flow rate through the relief valve and stack; the pressure drop is calculated across each piping section and device from the stack back through the station to the inlet end of the upstream piping section. The calculated inlet pressure value is compared to the specified maximum inlet pressure; if the values are equivalent within a certain tolerance, the calculation is complete. If the difference in the values is not within the tolerance, a new flow rate is calculated, the pressure drop values are re-calculated, and the inlet pressure check is repeated. This process continues until the difference between the calculated inlet pressures is within the preset allowable tolerance.

All failed calculations assume that no “backflow” occurs from the downstream system. If the downstream system is supplied by multiple sources, depending on system pressures, it may be possible for the downstream system to flow toward the failed station and affect the capacity of the overpressure protection device.

For configurations containing a monitor regulator, the general calculation method involves calculating the pressure drop across each piping section and device. A calculation error will occur if minimum operating pressures cannot be maintained. For example, if the inlet pressure to a regulator is not sufficient to maintain the set pressure, either for capacity or minimum differential pressure reasons, an error is generated during the calculation.

### **Maximum Regulator Capacity**

---

For normal conditions, the minimum inlet pressure is used to calculate the maximum flow that can be passed through the piping and devices upstream of the regulator while maintaining the required set pressure and minimum differential pressure requirements. The calculation method uses a trial-and-error solution method.

For failed conditions, where a relief valve is present, the maximum inlet pressure is used to calculate the maximum flow that can be passed through the upstream piping and regulator while the outlet pressure is no less than the reset pressure of the relief valve.

### **Maximum Relief Valve Capacity**

---

For normal conditions, no calculation is performed.

For failed conditions, the relief valve is assumed to be in a wide-open position. The MAOP plus allowable build-up pressure is used as the inlet pressure to the intermediate piping upstream of the relief valve. The maximum flow through the intermediate piping, relief valve, and stack piping is calculated. The relief valve capacity may be limited by the intermediate or stack piping capacity and optionally by the velocity of the stack flow.

If the *Limit Stack Velocity To Atmospheric Pressure* calculation option is selected, the outlet pressure of the stack is assumed to be at atmospheric pressure (gauge pressure equal zero (0)). If the option is not selected, the stack outlet pressure is not limited and may be greater than atmospheric pressure, depending on the flow conditions.

### Sonic Velocity Handling

---

When flow velocity in the associated station piping reaches sonic velocity, the flow condition is referred to as choked or critical flow. No further flow can be passed through the section at the current pressure conditions when choked flow is present. If the “Limit Pipe Flow To Sonic Velocity” calculation option is selected, the flow velocity through each piping section is limited during the calculation process to a flow rate no greater than the value that would produce a flow velocity equal to the sonic velocity value at the encountered conditions. If the *Limit Pipe Flow To Sonic Velocity* calculation option is selected, the flow velocity is unlimited.

An additional message or note may be displayed when the flow velocity in one of the piping components reaches sonic velocity. When using the Schematic Data Interface, the stack component item will be colored orange if the stack flow velocity has reached sonic velocity (choked flow).

The sonic velocity values are calculated using the GPSA calculation method.

### Pipe and Fitting Component Handling

---

Pipe and fittings associated with a piping section are entered using one of the component entry methods. During the calculations, the resistance of the components is calculated by combining the equivalent length values of the attached components. When components of varying inside diameter are used, a common or base inside diameter value is established, and all equivalent values are converted to the base diameter. The pressure drop for a segment is calculated using the base diameter value and the sum of the associated equivalent lengths. When multiple sizes are used, the flow velocity value is based on the smallest diameter and lowest pressure.

The order of the component entry is not significant except when “branch” fittings are used in the intermediate piping component list. On stations configured with regulator and relief valve stages, the intermediate piping components are used to describe the pipe and fittings located between the regulator outlet and the relief valve inlet. By this definition, in most cases, the intermediate piping includes the piping that connects to the outlet piping and supplies the downstream system. Usually, a tee or other branch connection is installed to

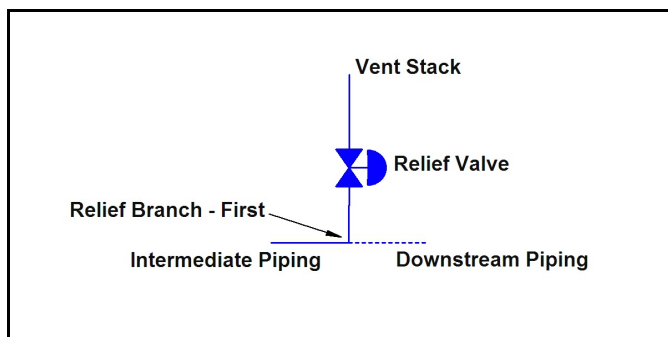


Figure 1

connect the relief valve to the intermediate piping, with the branch piping only experiencing flow when the relief valve is venting. In this case, a special component can be used to better define the intermediate piping components. It is the “Relief Branch - First” component and is listed on the *Fittings* data tab of the Piping Components screen. The Relief Branch - The first component is used to indicate where the vent piping “branches” from the intermediate piping at the beginning of the branch that runs to the relief valve. The flow through the piping upstream of the First Relief Branch is equal to the flow through the relief valve plus any downstream flow. The flow through the piping downstream of the First Relief Branch is equal to the flow through the relief valve only. See Figure 1 for further explanation.

When more than one relief valve is present, each valve and stack are assumed to be identical. In the case of multiple valves, two special components can be used to better define the intermediate piping components. They are the “Relief Branch - First” and “Relief Branch - Second” components and are listed on the *Fittings* data tab of the Piping Components screen. The Relief Branch - The first component is used to indicate where the vent piping “branches” from the intermediate piping at the beginning of the common run to the

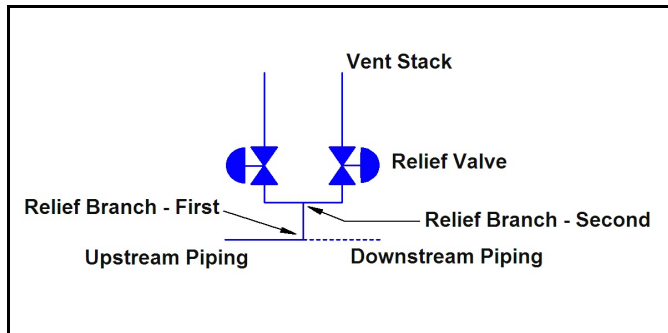


Figure 2

valve cluster. The Relief Branch - The second component is used to indicate where the vent piping “branches” from the common run to each individual valve. The flow through the piping upstream of the First Relief Branch is equal to the flow through all of the relief valves plus any downstream flow. The flow through the common run between the First and Second Relief Branches is equal to the flow through the relief valves only. The flow through the piping downstream of the Second Relief Branch is equal to the flow through a single relief valve only. The flow through each of the relief valves is assumed to be identical. See Figure 2 for further explanation.



### Allowable Build-Up Pressure Handling

---

The allowable build-up pressure during a failure is handled differently depending on the selected Regulatory Code and certain calculation options. Where the selected regulatory code allows the MAOP value to be increased during failed conditions, the allowable build-up pressure is calculated based on this criteria. The User may prevent the MAOP from being increased by selecting the “Fixed” option on the associated piping data screen.

It is assumed that the first stage upstream piping section is not subject to “failure,” and the MAOP of this section is not increased.

In certain high-pressure/high-stress conditions, certain regulatory codes require that the allowable build-up pressure be based on the SMYS value of the associated components. In these cases, the User must enter an appropriate value for the SMYS value.

### Token Relief Valve Handling

---

A “token” relief valve refers to a device that is used as a signal for a certain pressure situation. The device is not intended to be used for overpressure protection. The device is usually comparatively small and usually set to indicate that the monitor regulator of a monitor-style configuration has taken control. They are sometimes referred to as a whistle because their small size tends to produce a high-pitched audible sound when they are operating.

StationManager allows a token relief valve to be specified for stages containing a regulator. If a token relief is indicated, the set pressure may be entered. Neither the device nor its set pressure is used as part of the capacity or compliance calculations.

### Calculation Tolerances

---

Many of the StationManager calculations involve the use of trial-and-error solution methods. In these cases, the calculations are repeatedly performed until a certain check parameter is within a specified tolerance. For pressure-type parameters, the tolerance is set at 0.001 psi. For volumetric flow type parameters, the tolerance is set at 0.001 Mcfh. The tolerances are preset and cannot be changed by the User.



### Specific Calculation Methods

---

The following describes the general calculation assumptions and methods used in computing values for the specific stage configurations and conditions supported by the software.

#### Regulator Only

---

In this type of configuration, the stage is assumed to contain only an upstream device. No intermediate piping is used.

##### *Normal Conditions -*

The regulator is assumed to be operating normally. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for all portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

##### *Failed Conditions -*

The regulator is assumed to be operating wide-open. The supply pressure is set at the maximum inlet pressure. The maximum wide-open flow rate is calculated and reported. The supply pressure is reported as the maximum pressure for all portions of the stage piping. The pressure values downstream of the regulator under failed conditions represent the pressures that would be present if the regulator were allowed to flow wide open; if the flow is restricted, the downstream pressures could increase to a level equal to the supply pressure.

#### Relief Valve Only

---

In this type of configuration, the stage is assumed to contain only a downstream device. No intermediate piping is used.

##### *Normal Conditions -*

No calculation was performed.

### ***Failed Conditions -***

The relief valve is assumed to be wide-open. The supply pressure is set at the maximum inlet pressure. The flow through the upstream piping is equal to the stack flow plus the minimum downstream flow rate. The flow through the relief valve and the stack are equivalent. The pressure at the outlet end of the stack piping is set depending on the value of the *Limit Stack Outlet Pressure To Atmospheric Pressure* option, as described earlier. The relief valve capacity may be limited by the stack capacity and/or flow velocity in the stack. The flow through the stack, relief valve, and upstream piping is calculated using a trial-and-error method.

### **Regulator & Relief Valve**

---

In this type of configuration, the stage is assumed to contain piping segments along with an upstream device (the regulator) and a single downstream device (the relief valve).

### ***Normal Conditions -***

The regulator is assumed to be operating normally. The relief valve is assumed to be closed. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for the non-stack portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

### ***Failed Conditions -***

The regulator is assumed to be wide-open. The relief valve is assumed to be wide-open. The supply pressure is set at the maximum inlet pressure. The flow through the upstream piping, upstream device, and intermediate piping is equal to the stack flow plus the minimum downstream flow rate. The flow through the relief valve and the stack are equivalent. The pressure at the outlet end of the stack piping is set depending on the value of the *Limit Stack Outlet Pressure To Atmospheric Pressure* option, as described earlier. The relief valve capacity may be limited by the stack capacity and/or flow velocity in the stack. The flow through the stack, relief valve, and upstream piping is calculated using a trial-and-error method.

If a relief valve branch component is used, the flow through the intermediate piping and components up to the first branch component is equal to the stack flow plus the minimum downstream flow. Flow through components after the first branch component is equal to the relief valve and stack flow.

The calculation of the station pressures downstream of the regulator varies depending on whether the failed capacity of the regulator is greater than or less than the capacity of the relief valve. In the case where the regulator capacity is greater than the relief valve, the downstream pressures are calculated based on the flow rate of the relief valve and will generally reflect values greater than allowed. Where the regulator capacity is less than the relief valve, the downstream pressures are based on the flow of the regulator. The reported values will vary depending on certain calculation options. If the *Limit Relief Valve Inlet Pressure To No Less Than Reset Pressure* option is selected, the values will be calculated such that inlet pressure to the relief valve is greater than or equal to the relief valve reset pressure. When this option is not selected, the reported pressures represent the predicted pressures if the relief valve were not allowed to reset and there was no backflow from the downstream system.

### Regulator & Multiple Relief Valves

---

In this type of configuration, the stage is assumed to contain an upstream device (the regulator) and multiple downstream devices (multiple relief valves). The relief valves, stack piping, and intermediate piping to the relief valves are assumed to be identical.

#### ***Normal Conditions -***

The regulator is assumed to be operating normally. The relief valves are assumed to be closed. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for the non-stack portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

#### ***Failed Conditions -***

The regulator is assumed to be wide-open. The relief valves are assumed to be wide-open. The supply pressure is set at the maximum inlet pressure. The flow through the upstream piping, upstream device, and intermediate piping is equal to the total of the stack flows plus the minimum downstream flow rate. The flow through each of the relief valves and the stacks are equivalent. The pressure at the outlet end of the stack piping is set depending on the value of the *Limit Stack Outlet Pressure To Atmospheric Pressure* option, as described earlier. The relief valve capacity may be limited by the stack capacity and/or flow velocity in the stack. The flow through each of the stack, relief valve, and upstream piping is calculated using a trial-and-error method.

If a relief valve branch component is used, the flow through the intermediate piping and components up to the first branch component is equal to the total of the stack flow plus the minimum downstream flow. Flow through components after the first branch component and before the second branch component is equal to the total of the relief valves and stack flows. Flow through components after the second branch component is equal to flow for a single relief valve and stack.

The pressures downstream of the regulator are reported and calculated as described in the Regulator & Relief Valve calculation description.

### Dual Regulators & Relief Valve

---

In this type of configuration, the stage is assumed to contain piping segments along with two upstream devices (two identical regulators) and one or more downstream devices (the relief valve or valves). The upstream piping and intermediate piping are assumed to be connected directly to the regulators - this assumption tends to overestimate the pressure loss.

#### ***Normal Conditions -***

Both regulators are assumed to be operating normally. The relief valve or valve is assumed to be closed. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for non-stack portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the regulators' minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

If the regulator set pressures are not equal, for calculation purposes, the outlet pressure of both regulators is assumed to be equal to the lower of the regulator set pressures.

#### ***Failed Conditions -***

It is assumed that only one regulator fails, that the failed regulator is assumed to be wide-open, and that the non-failed regulator shuts off due to the increased downstream pressure. The relief valve is assumed to be wide-open. The supply pressure is set at the maximum inlet pressure. The flow through the upstream piping, upstream device, and intermediate piping is equal to the stack flow plus the minimum downstream flow rate. The flow through the relief valve and the stack are equivalent. The pressure at the outlet end of the stack piping is set depending on the value of the *Limit Stack Outlet Pressure To Atmospheric Pressure* option, as described earlier. The relief valve capacity may be limited by the stack capacity and/or flow velocity in the stack. The flow through the stack, relief valve, and upstream piping is calculated using a trial-and-error method.

If relief valve branch components or multiple relief valves are used, the flow through the intermediate piping and components are calculated as described in the previous topics.

The pressures downstream of the regulator are reported and calculated as described in the Regulator & Relief Valve calculation description.



### **Regulator & Regulator (Downstream Monitor)**

---

In this type of configuration, the stage is assumed to contain upstream, intermediate, and downstream piping, a single upstream device (controlling regulator), and a single downstream device (monitor regulator).

#### ***Normal Conditions -***

The upstream (controlling) regulator is assumed to be operating normally. The downstream (monitor) regulator is assumed to be wide-open. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for all portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the upstream regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate piping, downstream device, and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

#### ***Failed Conditions -***

The upstream (controlling) regulator is assumed to be failed wide-open. The downstream (monitor) regulator is assumed to be controlling. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for all portions of the stage piping. The pressure drop across the upstream piping, upstream device, and intermediate piping is computed. If the outlet pressure of the intermediate piping is sufficient to allow the downstream regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the downstream piping. If the outlet pressure of the intermediate piping is not sufficient, a calculation error will occur.

### **Regulator & Regulator (Upstream Monitor)**

---

In this type of configuration, the stage is assumed to contain upstream, intermediate, and downstream piping, a single upstream device (monitor regulator), and a single downstream device (controlling regulator).

#### ***Normal Conditions -***

The upstream (monitor) regulator is assumed to be wide-open. The downstream (controlling) regulator is assumed to be operating normally. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for all portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the upstream regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate piping, downstream device, and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

### ***Failed Conditions -***

The downstream (controlling) regulator is assumed to be failed wide-open. The upstream (monitor) regulator is assumed to be controlling. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for all portions of the stage piping. The pressure drop across the upstream piping is computed. If the outlet pressure of the upstream piping is sufficient to allow the upstream regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate piping, downstream device, and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

### **Regulator & Regulator (Upstream Working Monitor)**

---

In this type of configuration, the stage is assumed to contain upstream, intermediate, and downstream piping, a single upstream device (working monitor regulator), and a single downstream device (controlling regulator).

### ***Normal Conditions -***

The upstream (working monitor) regulator is assumed to be controlling at its set working pressure. The downstream (controlling) regulator is assumed to be operating normally. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for all portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the upstream regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate piping. If the outlet pressure of the intermediate piping is sufficient to allow the downstream regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the downstream piping. If the outlet pressure of either the upstream or intermediate piping is not sufficient, a calculation error will occur.

### ***Failed Conditions -***

The downstream (controlling) regulator is assumed to be failed wide-open. The upstream (working monitor) regulator is assumed to be controlling at its monitor set pressure. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for all portions of the stage piping. The pressure drop across the upstream piping is computed. If the outlet pressure of the upstream piping is sufficient to allow the upstream regulator's minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate piping, downstream device, and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

### Regulators & Shared Relief Valve

---

In this type of configuration, two runs are considered together. One run is assumed to contain a regulator and relief valve combination, and the other run is assumed to contain a single regulator. The relief valve is assumed to be “shared” by the two runs. The regulators’ Size/Type Code may be different. Each run is essentially calculated as if it were an independent run configured with a regulator and relief valve.

#### ***Normal Conditions -***

The regulator is assumed to be operating normally. The relief valve is assumed to be closed. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for the non-stack portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the regulator’s minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.

#### ***Failed Conditions -***

It is assumed that only one regulator fails at a time. The capacity of each individual regulator is compared against the capacity of the regulator during the compliance check.

A failed calculation is performed for each run as described in the Regulator & Relief Valve calculation description.

### Regulator & Combined Relief Valves

---

In this type of configuration, both stages of a run are considered together. The upstream stage is assumed to contain an upstream device (regulator) and a downstream device (relief valve). The downstream stage is assumed to contain a single downstream device (relief valve). The relief valves’ Size/Type Code may be different.

#### ***Normal Conditions -***

The regulator is assumed to be operating normally. The relief valves are assumed to be closed. The supply pressure is set at the minimum inlet pressure. The maximum required downstream flow rate is used for the non-stack portions of the stage piping. The pressure drop across the upstream piping section is computed. If the outlet pressure of the upstream piping is sufficient to allow the regulator’s minimum differential pressure and capacity requirements to be met, the pressure drop is calculated across the intermediate and downstream piping. If the outlet pressure of the upstream piping is not sufficient, a calculation error will occur.



### ***Failed Conditions -***

The regulator is assumed to be wide-open. The relief valves are assumed to be wide-open. The supply pressure is set at the maximum inlet pressure. The flow through the upstream piping, upstream device, and intermediate piping is equal to the total of the stack flows plus the minimum downstream flow rate. The flow through the upstream relief valve and the stack is calculated. If the flow through the upstream device is greater than or equal to the flow through the upstream device, then the flow through the downstream relief valve is assumed to be zero (0). If the flow through the upstream device is less than the flow through the upstream device, then the flow through the downstream relief valve is calculated. The pressure at the outlet end of the stack piping is set depending on the value of the *Limit Stack Outlet Pressure To Atmospheric Pressure* calculation option, as described earlier. The relief valve capacity may be limited by the stack capacity and/or flow velocity in the stack. The flow through each of the stack, relief valve, and upstream piping is calculated using a trial-and-error method.

If a relief valve branch component is used, the flow through the intermediate piping and components up to the first branch component is equal to the total of the stack flow plus the minimum downstream flow. Flow through components after the first branch component and before the second branch component is equal to the total of the relief valves and stack flows. Flow through components after the second branch component is equal to flow for a single relief valve and stack.

The combined capacity of the relief valves (summation of the capacity of each valve) is checked against the failed capacity of the regulator during the compliance check.

The pressures downstream of the regulator are reported and calculated as described in the Regulator & Relief Valve calculation description.

### **Regulator With Internal Relief Valve**

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This type of device is not specifically handled; however, the configuration can be accommodated by entering it as a regulator and relief configuration and entering the capacity of the internal relief valve. Using this configuration, the normal and failed calculations will be performed similarly to a regulator and relief valve configuration. If this option is used, add a notation to the station comments to explain the situation.

## Working With The Calculation Options

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There are a variety of User-selectable options that affect the way the calculations are performed and the results are reported. Some general notes on their use and effects are described in the following.

### **Allow Empty Component Lists**

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Selecting this option allows the various piping sections to be left empty. When this option is selected, the pressure drop across the associated segment is not calculated, it is assumed to be zero (0). This makes data entry easier; however, depending on which segment is affected, it may yield either conservative or unconservative results. This option controls how the empty component lists are handled during the calculation process.

#### ***Regulator And Relief Valve Style Stages -***

Ignoring the inlet piping under failed conditions will yield conservative results - that is, the failed capacity of the regulator will be overestimated.

Ignoring the intermediate piping yields varied results. In one case, it increases the inlet pressure to the relief valve, resulting in an optimistic (unconservative) relief valve capacity. In the other case, the pressure for the inlet of the downstream piping would be calculated higher than if the intermediate piping were included, yielding conservative results with respect to the MAOP comparison.

Ignoring the stack yields an optimistic (unconservative) relief valve capacity.

Ignoring any of the piping sections under normal conditions will yield unconservative results - overestimating the capacity of the regulator and stage.

#### ***Regulator/Monitor Style Stages -***

Ignoring any of the piping sections under failed or normal conditions will yield unconservative results - overestimating the capacity of the regulator and stage.

### **Ignore Inlet/Relief Valve Or Security Set Pressure Check**

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This option does not affect the actual calculations. Normally, the relief valve set pressure is expected to be less than the inlet pressure to the station. When this option is not selected, an error message will occur, and the station will be ignored during the calculation process if the inlet pressure is found to be less than the relief valve set pressure. Selecting this option disables the error check and allows the station to be calculated. This option applies to the failed calculation for regulator and relief valve style stages.



### **Ignore Relief Valve Build-Up Pressure Check**

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Under failed regulator conditions, the inlet pressure to the relief valve is assumed to increase to a value at least equal to the set point for the relief valve. The relief valve is assumed to open at that point.

During the failed calculations, it is assumed that the relief valve is in a continuous wide-open position. The inlet pressure to the relief valve is normally allowed to reach whatever value provides a balanced flow between the failed regulator and the wide-open relief valve, all piping pressure drops included. If the capacity of the failed regulator and relief valve are similar, or the capacity of the regulator is greater than the relief valve, the calculated inlet pressure will be above the relief valve set point. If the relief valve capacity is large compared to the regulator capacity, the calculated inlet pressure to the relief valve will generally be less than the set point. In actual operation, this situation would usually cause the relief valve to reset until the pressure increased again to the set point, reopening the valve and repeating the process.

In some cases, the relief valve will not fully open until the inlet pressure to the valve (the build-up pressure) is some incrementally higher value than the set pressure. In this case, the minimum build-up pressure value can be used to specify the incrementally required build-up pressure for a full opening.

This option controls how the inlet (build-up) pressure for a device is handled during the calculation process. When this option is selected, the pressures along the intermediate piping may be less than the relief valve set pressure and reflect the estimated values that would be present if the relief valves were not able to reset and were allowed to flow continuously. The calculated pressures are based on the stack outlet pressure.

When this option is not selected, the pressures along the intermediate piping reflect values that would be present if the inlet pressure to the relief valve was maintained at or above the relief valve set pressure plus minimum build-up pressure at the balanced flow rate. In this case, the calculated pressure values are generally higher than the expected actual values. The calculated pressures are based on the relief valve set pressure plus minimum build-up pressure.

This option affects the failed pressure calculations for stages regulator and relief valve style stages only. It does not affect the capacity or MAOP comparisons.

### **Ignore Minimum Differential Pressure Check**

---

Some regulators and relief valves require that the differential pressure across the device to be fully open. As used by StationManager, the differential pressure is the difference between the inlet and outlet pressure. This option controls how the differential across a device is handled during the calculation process.

If this option is not selected, an attempt is made during the calculation process to maintain the differential across a device to meet or exceed the specified minimum differential value. If this option is selected, any differential greater than zero (0) is allowed during the calculations.



This option affects both normal and failed pressure calculations for any type of configuration. An error is generated if the option is not selected and the minimum differential cannot be achieved.

### **Ignore Reset Differential Handling**

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Some relief valves require that the inlet pressure decrease a certain amount below the set pressure before the valve will reseal or reset itself. If this option is not selected, an attempt is made during the calculation process to maintain the differential across a device to meet or exceed the specified minimum differential value. If this option is not selected, the specified minimum reset differential must be achieved before the valve is considered to reset during the calculations. If this option is selected, the valve is assumed to reset when the calculated pressure is less than the set pressure.

This option affects the failed pressure calculations for relief valve devices only.

### **Limit Pipe Flow To Sonic Velocity**

---

During the calculation process, the flow velocity along the various piping sections is calculated based on the flow rate and pressure values. The velocity varies along an individual pipe section, with the velocity at the upstream end of the pipe always being higher than the velocity at the downstream end. There is a natural limit for the maximum velocity that can be achieved in pipe flow; the value is equal to the speed of sound for a specific gas composition and conditions - sonic velocity. Most regulator and relief valve flow equations account for this limit, using different flow equations for sonic and subsonic conditions. Pipe flow equations do not; they generally let the velocity increase limitlessly. This option controls how the sonic velocity limit is handled in pipe flow calculations.

When this option is selected, the pipe flow velocities are limited to no more than sonic velocity. When this option is not selected, pipe flow velocities are not limited. Limiting the velocity provides more realistic results. Not limiting the velocity yields unrealistic results. Unlimited stack velocity values yield optimistic (unconservative) relief valve and vent capacity values.

This option affects pressure and capacity calculations for all types of stages and devices.

### **Ignore Relief Inlet To Less Than Reset Pressure**

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The background for this option is similar to the one described in the Ignore Relief Valve Build-Up Pressure. In this case, the relief inlet pressure is compared to the reset pressure (set pressure less minimum reset differential pressure). When this option is not selected, the inlet pressure to the relief valve is maintained at or above the reset pressure. The calculated pressures are based on the relief valve set pressure plus minimum build-up pressure. When this option is selected, the inlet pressure is not adjusted during the calculation process. The calculated pressures are based on the stack outlet pressure.



This option affects the failed pressure calculations only for stages containing a relief valve device. It does not affect the capacity or MAOP comparisons.

### **Limit Relief Stack To Outlet To Atmospheric Pressure**

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During failed conditions, high-velocity values may be experienced through all of the piping sections, but especially through the vent stack. It is common for the velocity in the vent stack to reach sonic velocity and for the flow in the vent stack to become “choked.” When the stack flow becomes choked, the flow through the stack is limited or restricted by the velocity. Most stacks vent directly to the atmosphere, so the pressure normally found at the downstream end of the pipe is the same as atmospheric pressure. It has been common practice over the years to assume that the pressure at the downstream end of the stack is always equal to atmospheric pressure. However, under choked flow conditions, it is common for the pressure at the downstream end of the stack to increase above atmospheric pressure. This option controls how the outlet pressure for the stack is handled during the calculations.

When this option is selected, the pressure at the downstream (outlet) end of the stack is maintained at atmospheric pressure. Limiting the outlet pressure limits the capacity of the stack and consequently limits the capacity of the relief valve, producing conservative results. When this option is not selected, the pressure at the downstream (outlet) end of the stack is not limited. Not limiting the outlet pressure yields more realistic results. When the stack is choked, the velocity at the outlet end of the stack is the same in either case; however, when the pressure is allowed to increase, the gas density also increases, allowing more “standard” volume of gas to flow through the stack.

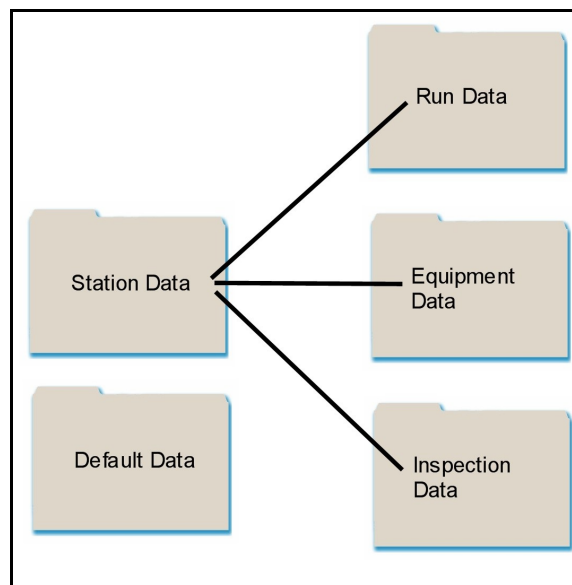
This option affects the failed pressure and capacity calculations only for stages containing a relief valve device.

### Database Definition

StationManager uses a proprietary database to maintain its files. The database is made up of a number of various data files, with each file containing a set of data fields or items. The content and management of the database files are described in the following.

### Data Files

StationManager uses several data files to create its database. With the exception of the Default Data file, the data files are linked together using an internally generated key field. The Station Data file serves as the main or server file for the database. The other data files are linked to the Station Data file by way of the key field. The data file relationships are shown in the following figure.



All of the data files associated with a specific database possess the same name as the database with different extensions. The content and use of the various data files are shown below.

Data Files		
File Type	Extension	Description
Default Data	.dft	Contains default data values, global data values, and various settings and options.
Station Data	.sdb	Contains general station and configuration values.

Data Files		
File Type	Extension	Description
Run Data	.rdb	Contains hydraulic and equipment setting values and results.
Equipment Data	.edb	Contains equipment values.
Inspection Data	.idb	Contains inspection values and results.

StationManager automatically manages the handling of the files in terms of its operational use; however, if the files are manually copied, moved, or deleted, the User must ensure that all of the files are included as appropriate.

Prior to performing various routines and operations, a set of backup data files will be created. The backup files end in a double extension, with a second extension of “.bak.” The content of the backup files can be restored to the database using the *Restore Previous Database* item in the *File* menu. When a new backup file is created, the previous backup file is sent to the Windows Recycle bin.

When a database is “opened,” the content of the data files is read into a set of temporary working data files. Until the database is saved, changes to the database are maintained only in the temporary files. The temporary files are deleted when the database is closed.

## Data Items

General Station Data			
Item Name	Item Description	Item Type (See Notes)	Required For Calculation
Location Information			
City/Town	Specifies the city or town associated with the station location.	Entered String Up to 20 characters	N
District Identification	Specifies the pressure or operating district associated with station.	Entered String Up to 40 characters	N
Legal Description	Specifies the “legal” description of the station location.	Entered String Up to 40 characters	N



<b>General Station Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
Location	Specifies the descriptive location of the station.	Entered String Up to 40 characters	N
State	Specifies the state associated with the station location.	Entered String Up to 10 characters	N
Station Description	Specifies the descriptive identification of the station.	Entered String Up to 40 characters	N
Station Identification	Specifies the identification assignment for the station.	Entered String Up to 40 characters	N
X Coordinate	Specifies the X (east-west) coordinate value for the station's location.	Entered Double Precision number or String value Up to 10 characters	N
Y Coordinate	Specifies the Y (north-south) coordinate value for the station's location.	Entered Double Precision number or String value Up to 10 characters	N
<b>Configuration</b>			
Number Of Runs	Specifies the number of runs for the station.	Entered Integer 1 or 2	Y
Operating Status	Specifies the station's operating status.	Entered Index	Y
Stages Per Run	Specifies the number of pressure cuts/stages for each run.	Entered Integer 1 or 2	Y





<b>General Station Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
<b>Capacity</b>			
Maximum Required	Specifies the maximum required flow capacity of the station.	Entered Single Precision >= 0	Y
Minimum Required	Specifies the minimum required flow capacity of the station.	Entered Single Precision >= 0	Y
<b>Gas Properties</b>			
Atmospheric Pressure	Specifies the atmospheric pressure value associated with the specified elevation value.	Calculated Single Precision	
Base Pressure	Specifies the pressure basis for the measured and calculated volumes.	Entered Single Precision >= 0	Y
Base Temperature	Specifies the temperature basis for the measured and calculated volumes.	Entered Single Precision >= 0	Y
Elevation	Specifies the height above mean sea level of the station's location.	Entered Single Precision Any	Y
Flowing Temperature	Specifies the average gas flowing temperature at the station's inlet.	Entered Single Precision >= Absolute 0	Y
Specific Gravity	Specifies the average specific gravity of the gas flowing through the station, as compared to dry air at same conditions.	Entered Single Precision >= 0	Y
Specific Heat Ratio	Specifies the average heat ratio of the gas flowing through the station. Ratio of the specific heat at constant pressure to specific heat at constant volume.	Entered Single Precision >= 0	Y
Viscosity	Specifies the average absolute or dynamic viscosity of the gas flowing through the station.	Entered Single Precision >= 0	Y



<b>General Station Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
<b>Miscellaneous Data</b>			
Comments / Notes	Specifies comments and notes associated with the station configuration, location, or operation.	Entered String Up to 40 characters	N
Design Date	Specifies the date when the station was initially designed.	Entered Date	N
Designed By	Specifies the name of the person that designed the station.	Entered String Up to 40 characters	N
Entered/Revised By	Specifies the person that entered or last reviewed data for the station.	Entered String Up to 40 characters	N
Entry/Revision Date	Specifies the date when the station data was entered or last revised.	Entered Date	N
In-Service Date	Specifies the date when the station was placed into service.	Entered Date	N
Jurisdiction	Specifies the regulatory jurisdiction for the station.	Entered Index	N
<b>Image Data</b>			
Image Filename	Specifies the name of an attached image file. Up to ten files may be attached.	Entered String Up to 120 characters	N
<b>Notes</b> <ul style="list-style-type: none"> <li>• The General Station data is stored in the “station database” file. The station database file ends in a “.sbd” extension.</li> <li>• The <i>Item Type</i> item lists whether the associated data item is Entered or Calculated, the value data type, and any value restrictions. Entered means that the value can be entered by the User. Calculated means that the value is computed and entered by the software. The data types are defined in the Program Limitations topic.</li> <li>• The <i>Required For Calculation</i> item indicates whether the item is required for a hydraulic calculation to be performed. A “Y” value means that the item is required. An empty or “N” value means that the value is optional. Optional items can be used to store alternative item values at the User’s discretion.</li> </ul>			

<b>Hydraulic Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
<b>Configuration</b>			
Run Type	Specifies the operating type of the associated run.	Entered Index	Y
Stage Style	Specifies the configuration type of the associated stage.	Entered Index	Y
<b>Downstream Device</b> - If a downstream device is present the following data items are required as indicated.			
Device Count	For relief valves, specifies the quantity (number) of devices installed. Not used for regulators.	Entered Integer 1, 2 or 3	Y
Enter Capacity	Specifies whether the capacity of the device is calculated or entered.	Entered Boolean	Y
Entered Capacity	If the capacity is specified as entered, specifies the entered capacity of the device.	Entered Single Precision >= 0	Y
Minimum Build-Up Pressure	For relief valves, specifies a User-defined minimum build-up pressure for the relief valves. Not used for regulators.	Entered Single Precision >=0	Y
Pressure Units	Specifies the dimensional units to use for the associated pressure values.	Entered Fixed String	Y
Set Pressure	Specifies the set pressure for the downstream device.	Entered Single Precision >= minus 1 atmosphere	Y
Shared Device	When a relief valve is present and more than one run is present, this item specifies whether the valve is shared by both runs. Not used for regulators.	Entered Boolean	Y

<b>Hydraulic Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
Size/Type Code	Specifies the Size/Type Code for the downstream device. The value must correspond to a value found in the respective Property Table.	Entered Fixed String Up to 20 characters	Y
Token Relief	Indicates whether a token relief valve is installed. This item is only displayed when the downstream device is a regulator.	Entered Boolean	N
Token Relief Set Pressure	If a token relief valve is installed, this item specifies the set pressure for the token relief valve.	Entered Single Precision ≥ minus 1 atmosphere	N
<b>Piping Section - Downstream, Intermediate, Relief Stack Piping</b>			
Flow Equation	Specifies the pipe flow equation to use for the associated piping section.	Entered Index	Y
Pipe Efficiency	Specifies the pipe flow efficiency value to use for the associated piping section.	Entered Single Precision ≥ 0	Y
Piping Components	Specifies the pipe and fitting components assigned to the associated piping section. Up to ten components may be assigned to a piping section.	Entered Component	Y
<b>Upstream Device</b>			
Enter Capacity	Specifies whether the capacity of the device is calculated or entered.	Entered Boolean	Y
Entered Capacity	If the capacity is specified as entered, specifies the entered capacity of the device.	Entered Single Precision ≥ 0	Y
Pressure Units	Specifies the dimensional units to use for the various pressure values.	Entered Fixed String	Y

<b>Hydraulic Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
Set Pressure	Specifies the set pressure for the upstream device.	Entered Single Precision >= minus 1 atmosphere	Y
Size/Type Code	Specifies the Size/Type Code for the upstream device. The value must correspond to a value found in the respective Property Table.	Entered Fixed String Up to 20 characters	Y
Token Relief	Indicates whether a token relief valve is installed. This item is only displayed when the upstream device is a regulator.	Entered Boolean	N
Token Relief Set Pressure	If a token relief valve is installed, this item specifies the set pressure for the token relief valve.	Entered Single Precision >= minus 1 atmosphere	N
<b>Upstream Piping</b>			
Flow Equation	Specifies the pipe flow equation to use for the upstream piping.	Entered Index	Y
Maximum Inlet Pressure	Specifies the maximum actual pressure at the inlet/upstream end of the associated upstream piping. Only used for the first stage of the first run in the station.	Entered Single Precision >= minus 1 atmosphere	Y
Minimum Inlet Pressure	Specifies the minimum actual pressure at the inlet/upstream end of the upstream piping. Only used for the first stage of the first run in the station.	Entered Single Precision >= minus 1 atmosphere	Y
Pipe Efficiency	Specifies the pipe flow efficiency value to use for the upstream piping.	Entered Single Precision >=0	Y

<b>Hydraulic Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
Piping Components	Specifies the pipe and fitting components associated with the upstream piping. Up to ten components may be assigned to the stack.	Entered Component	Y
Pressure Units	Specifies the dimensional units to use for the associated pressure values.	Entered Fixed String	Y
<b>Calculation Results</b> - The following items are maintained for normal and failed calculation results for the various pipe sections and devices.			
Flow Rate	Specifies the flow through the associated piping section or device.	Calculated Single Precision	N
Maximum Device Capacity	Specifies the maximum flow capacity of the associated device.	Calculated Single Precision	N
Pressure Drop	Specifies the maximum pressure drop across the associated pipe section.	Calculated Single Precision	N
Pressures	Specifies the inlet and outlet pressure values for each device, piping section, and stack.	Calculated Single Precision	N
Velocity	Specifies the maximum flow velocity through each piping section including the stack.	Calculated Single Precision	N
<b>Setting Values</b> - The following values are maintained for both the upstream and downstream devices.			
Final Primary Set Pressure	Specifies the final (as left) set pressure of the associated device or the primary pilot for the associated device.	Entered Single Precision	N
Final Secondary Set Pressure	Specifies the final (as left) set pressure of the secondary pilot for the associated device.	Entered Single Precision	N
Initial Primary Set Pressure	Specifies the initial (as found) set pressure of the associated device or the primary pilot for the associated device.	Entered Single Precision	N
Initial Downstream Secondary Set Pressure	Specifies the initial (as found) set pressure of the secondary pilot for the downstream device.	Entered Single Precision	N

<b>Hydraulic Data</b>			
Item Name	Item Description	Item Type (See Notes)	Required For Calculation
<p><i>Notes</i></p> <ul style="list-style-type: none"> <li>• The Hydraulic data is stored in the “run database” file. The run database file ends in a “.rbd” extension. A run record is maintained for each stage of each run in a station.</li> <li>• The <i>Item Type</i> item lists whether the associated data item is Entered or Calculated, the value data type, and any value restrictions. Entered means that the value can be entered by the User. Calculated means that the value is computed and entered by the software. The data types are defined in the Program Limitations topic.</li> <li>• The <i>Required For Calculation</i> item indicates whether the item is required for a hydraulic calculation to be performed. A “Y” value means that the item is required. An empty or “N” value means that the value is optional. Optional items can be used to store alternative item values at the User’s discretion.</li> <li>• Piping Section Items are maintained for the upstream, intermediate, downstream, and stack piping sections.</li> <li>• The pressure units for the upstream device are also used as the pressure units for the intermediate piping.</li> <li>• For a regulator, the pressure units for the downstream device are also used as the pressure units for the downstream piping. For a relief valve, the pressure units for the downstream device are also used as the pressure units for the stack piping.</li> </ul>			

<b>Inspection Data</b>			
Item Name	Item Description	Item Type (See Notes)	Required For Calculation
For Year	Specifies the calendar year that the inspection is associated with.	Entered Integer	N
<b>Status</b>			
Completed Inspection Date	Specifies the date when the most previous field inspection was conducted.	Entered Date	N
Inspection Status	Displays the status of the latest field inspection results.*	Calculated String	N
Previous Inspection Date	Specifies the date of the most previous field inspection.	Entered Date	N



<b>Inspection Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
Required Inspection Date	Displays the date for the next required field inspection.*	Calculated Date	N
<b>Inspection</b>			
Data Recorders OK	Specifies the status of the condition of any installed pressure recorders.	Entered Boolean	N
Enclosures OK	Specifies the status of the condition of any station enclosure, housing, or vault.	Entered Boolean	N
Locks OK	Specifies the status of the condition and presence of any security locks.	Entered Boolean	N
OPP Capacity Field Verified	Specifies whether the flow capacity of the Over Pressure Protection (OPP) device was field verified or tested.	Entered Boolean	N
OPP Devices Lock-Up OK	Specifies whether the Over Pressure Protection (OPP) device passed the “lock-up” (shut off) test.	Entered Boolean	N
OPP Devices Operated	Specifies whether the Over Pressure Protection (OPP) device was actually operated during the field inspection.	Entered Boolean	N
OPP Internals Inspected	Specifies whether the Over Pressure Protection (OPP) device was dismantled and the condition of its internal components were inspected.	Entered Boolean	N
Paint OK	Specifies the status of the condition of the paint or atmospheric corrosion protection for the station.	Entered Boolean	N
Regulator Internals Inspected	Specifies whether the regulator device was dismantled and the condition of its internal components were inspected.	Entered Boolean	N
Regulators Lock-Up OK	Specifies whether the regulator device passed the “lock-up” (shut off) test.	Entered Boolean	N



<b>Inspection Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
Regulators Operated	Specifies whether the regulator device was actually operated during the field inspection.	Entered Boolean	N
Signs OK	Specifies the status of the condition of the warning signs and posted notices for the station.	Entered Boolean	N
Site Protection OK	Specifies the status of the condition of the site protection for the station. For example, fencing, bollards, or livestock guards.	Entered Boolean	N
Strainers OK	Specifies the status of the condition of any strainers or filters installed at/on the station.	Entered Boolean	N
Valves OK	Specifies the status of the condition of the valves for the station.	Entered Boolean	N
Vents OK	Specifies the condition of the device and enclosure vents for the station.	Entered Boolean	N
<b>Miscellaneous</b>			
Actions Completed By	Specifies the name of the person who performed the required corrective actions.	Entered String Up to 20 characters	N
Action Completion Date	Specifies the date when any required actions were completed.	Entered Date	N
Inspected By	Specifies the name of the person who performed the field inspection.	Entered String Up to 20 characters	N
Inspection Date	Specifies the date when the field inspection was performed.	Entered Date	N
Notes	Specifies any notes and comments associated with the inspection.	Entered String Up to 120 characters	N

<b>Inspection Data</b>			
Item Name	Item Description	Item Type (See Notes)	Required For Calculation
Other Observations	Specifies whether additional observations or comments are included in the Inspection Notes.	Entered Boolean	N
Required Actions	Specifies any corrective actions that must be taken to bring the station into compliance.	Entered String Up to 120 characters	N
<b>Notes</b> <ul style="list-style-type: none"> <li>• The Inspection data is stored in the “inspection database” file. The inspection database file ends in a “.ibd” extension. An inspection record is maintained for the devices in each stage of each run in a station.</li> <li>• The <i>Item Type</i> item lists whether the associated data item is Entered or Calculated, the value data type, and any value restrictions. Entered means that the value can be entered by the User. Calculated means that the value is computed and entered by the software. The data types are defined in the Program Limitations topic.</li> <li>• The <i>Required For Calculation</i> item indicates whether the item is required for an inspection calculation to be performed. A “Y” value means that the item is required. An empty value means that the value is optional. Optional items are to be used to store alternative item values at the User’s discretion.</li> </ul> <p>* This item is calculated on the “fly” the item is not actually saved in the database.</p>			

<b>Equipment Data</b>			
Item Name	Item Description	Item Type (See Notes)	Required For Calculation
<b>Device Data</b> - Maintained for both Downstream and Upstream devices.			
Connection Style	Specifies the end connection style for the device.	Entered Index	N
Diaphragm Size	Specifies the main body diaphragm size for the device.	Entered String Up to 10 characters	N
Diaphragm Type	Specifies the main body diaphragm type for the device.	Entered String Up to 20 characters	N

<b>Equipment Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
Maximum Body Pressure	Specifies the maximum pressure for the device's main body.	Entered Single Precision >= Absolute 0	N
Pressure Units	Specifies the dimensional units for the associated pressure values.	Entered Fixed String	N
Serial Number	Specifies the serial number for the device.	Entered String Up to 20 characters	N
Spring Color	Specifies the main spring color for the device.	Entered Index	N
Spring Maximum Pressure	Specifies the maximum pressure rating for the main spring.	Entered Single Precision >= Absolute 0	N
Spring Minimum Pressure	Specifies the minimum pressure rating for the main spring.	Entered Single Precision >= Absolute 0	N
Spring Number	Specifies the sizing/rating number for the main spring.	Entered String Up to 20 characters	N
<b>Meter Data</b>			
Connection Style	Specifies the meter end connection type for the meter.	Entered Index	N
Maximum Capacity	Specifies the maximum capacity for the meter installed at the station.	Entered Single Precision >= 0	N
Minimum Capacity	Specifies the minimum capacity for the meter installed at the station.	Entered Single Precision >= 0	N
Pressure Rating	Specifies the maximum pressure rating for the meter installed at the station.	Entered Single Precision >= Absolute 0	N



<b>Equipment Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
Rating Units	Specifies the dimensional units used to express the various rating values.	Entered Fixed String	N
Size/Type Code	Specifies the Size/Type Code for the meter (if any) installed at the station.	Entered String Up to 30 characters	N
<b>Pilot Data - Downstream &amp; Upstream - Primary &amp; Secondary*</b>			
Manufacturer	Specifies the manufacturer's name for the associated pilot regulator.	Entered String Up to 20 characters	N
Maximum Body Pressure	Specifies the maximum body pressure rating for the associated pilot regulator.	Entered Single Precision >= Absolute 0	N
Model	Specifies the model name or number for the associated pilot regulator.	Entered String Up to 20 characters	N
Pressure Units	Specifies the dimensional units for the associated pressure values.	Entered Fixed String	N
Spring Color	Specifies the spring color for the associated pilot regulator.	Entered Index	N
Spring Maximum Pressure	Specifies the maximum pressure rating for the spring for the associated pilot regulator.	Entered Single Precision >= Absolute 0	N
Spring Minimum Pressure	Specifies the minimum pressure rating for the spring for the associated pilot regulator.	Entered Single Precision >= Absolute 0	N
Spring Number	Specifies the sizing/rating number for the spring for the associated pilot regulator.	Entered String Up to 20 characters	N

<b>Equipment Data</b>			
<b>Item Name</b>	<b>Item Description</b>	<b>Item Type (See Notes)</b>	<b>Required For Calculation</b>
<b>Pressure Recorder Data</b>			
High Range	Specifies the upper limit of the pressure recorder installed at the station.	Entered Single Precision ≥ Absolute 0	N
Low Range	Specifies the lower limit of the pressure recorder installed at the station.	Entered Single Precision ≥ Absolute 0	N
Make/Type	Specifies the name of the manufacturer and model or type of the data recorder (if any) installed at the station.	Entered String Up to 30 characters	N
Range Units	Specifies the dimensional units used to express the various range values.	Entered Fixed String	N
<b>Notes</b> <ul style="list-style-type: none"> <li>• The Equipment data is stored in the “equipment database” file. The equipment database file ends in a “.ebd” extension. An equipment record is maintained for the devices in each stage of each run in a station.</li> <li>• The <i>Item Type</i> item lists whether the associated data item is Entered or Calculated, the value data type, and any value restrictions. Entered means that the value can be entered by the User. Calculated means that the value is computed and entered by the software. The data types are defined in the Program Limitations topic.</li> <li>• The <i>Required For Calculation</i> item indicates whether the item is required for a hydraulic calculation to be performed. A “Y” value means that the item is required. An empty value means that the value is optional. Optional items can be used to store alternative item values at the User’s discretion.</li> <li>• Each of the items listed in the Device Data section is maintained for both the downstream and upstream devices.</li> <li>• Each of the items listed in the Pilot Data section is maintained for both the downstream and upstream devices and the primary and secondary pilots for those devices.</li> </ul> <p>* For upstream working monitor configurations, the primary upstream pilot is assumed to be associated with the working/controlling pilot, and a secondary upstream pilot is assumed to be associated with the monitor pilot.</p>			

### Equation Reference

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StationManager 2.1 uses the same set of equation definitions supported by the GASCalc 5.0 software. As an alternative to reproducing those definitions in this document - the appropriate GASCalc 5.0 calculation references have been distributed with the StationManager software. Select the appropriate document from the *View Calculation References* submenu of the *Help* menu to view the associated documentation.



### Personalize StationManager

Many Users have their own preferences on how they like to do their work and how they like the software to react to certain actions. StationManager attempts to accommodate these personal preferences by allowing a variety of preference and behavior settings to be made by the User. Some of these settings are applied only to the StationManager operating environment; others are applied and saved with the database data. The following table lists some of these settings, what they do, how they are set, and whether they apply to the StationManager operating environment or to the database data. Not all of the settings and options are included in the table. Descriptions of other options are included with the program features that they are associated with.

Setting/Behavior	Description	Set Using
<b>Operating Environment (Saved with StationManager)</b>		
<i>Path (File Locations)</i>		
Database Files	Sets the location where StationManager looks for database files.	The <i>Paths (File Locations)</i> item of the <i>File</i> menu.
Image Files	Sets the location where StationManager looks for image files.	The <i>Paths (File Locations)</i> item of the <i>File</i> menu.
Initialization Files	Sets the location where the initialization files are saved. This item is useful if multiple Users are using StationManager in a network environment. This item can be used to set a location for saving initialization and preference settings for each User.	The <i>Paths (File Locations)</i> item of the <i>File</i> menu.
License File	Sets the location where StationManager looks for the license file. This item is useful when using StationManager in a network environment.	The <i>Paths (File Locations)</i> item of the <i>File</i> menu.
Property Files	Sets the location where StationManager looks for the assigned Property Tables. This item is useful if multiple Users are using StationManager in a network environment. The value can be set to a common location so that all Users are using the same set of Property Tables and values.	The <i>Paths (File Locations)</i> item of the <i>File</i> menu.

Setting/Behavior	Description	Set Using
<i>Preferences</i>		
Automatically Open Database	Indicates whether the previously opened database is automatically re-opened each time StationManager is started.	The <i>Set Preferences</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Hide...	Indicates whether the associated data items and related messages are hidden from the display. This item is useful if a certain group of data items is not used - hiding their display makes the User interface a bit less cluttered and a bit easier to use.	The <i>Set Preferences</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Set Image Editor	Assigns the image editor to be used to “view/edit” attached image files. If the item is left empty (blank), the default Windows image editor is used. If a value is entered, enter the full path and executable filename with the extension.	The <i>Set Image Editor</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Show Tooltips	Indicates whether “pop up” tooltips are displayed when the mouse pointer is left idle over a command button, data field, or data list.	The <i>Set Preferences</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
<b>Database Environment (Saved With Database)</b>		
<i>Calculation Options</i>		
Allow Empty Component Lists	Specifies whether an error message should be displayed when a station contains a piping section with no components assigned.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Atmospheric Calculation Method	Specifies the method used to calculate the atmospheric pressure values.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Failure Style For Two Stage Set	Specifies the mode of failure for runs containing two pressure stages.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.



Setting/Behavior	Description	Set Using
Ignore Inlet/Relief Or Security Valve Set Pressure Check	Specifies whether the relief valve set pressure is checked against the maximum station supply pressure during calculations.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Ignore Minimum Differential Pressure Check	Specifies whether an error message should be displayed when the minimum differential across a device is not achieved during the calculation.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Limit Pipe Flow To Sonic Velocity	Specifies whether the flow velocity through various pipe sections associated with a station will be limited to sonic velocity (choked/critical flow).	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Outlet To Set Pressure Ratio Limit	Specifies the check value for the station outlet to the control device set pressure ratio.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Regulatory Code/Specification	Specifies the code to use during the compliance check and calculation.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Reset Review Date When Station Is Calculated	Specifies whether the “review date” data item is automatically set to the current date when a calculation is performed.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Velocity Limit - Failed Conditions	Specifies the maximum velocity limit for the failed condition checks.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.
Velocity Limit - Normal Conditions	Specifies the maximum velocity limit for the normal condition checks.	The <i>Set Calculation Options</i> item of the <i>Preferences</i> submenu of the <i>File</i> menu.

Setting/Behavior		Description	Set Using
<i>Hydraulic Values and Units</i>			
	Default Data Values	Indicates the default values to be used to populate various items for newly created stations, runs, and stages.	The <i>Set Default Values</i> item of the <i>Utilities</i> menu.
	Default Dimensional Units	Indicates the default and global dimensional units for the various data values.	The <i>Set Default Values</i> item of the <i>Utilities</i> menu.
<i>Report Options</i>			
	Number Of Decimals To Report	Indicates the number of decimal places to be displayed after the decimal point when displaying or reporting data values.	The <i>Set Report Options</i> item of the <i>Report</i> menu.
	Coordinate Heading	Indicates the caption to be used for the coordinate values.	The <i>Set Report Options</i> item of the <i>Report</i> menu.
	Coordinate Data Type	Indicates the format of the values entered for the coordinate items.	The <i>Set Report Options</i> item of the <i>Report</i> menu.
	Default Data Screen	Indicates which data entry screen to display when the Station Record column is double-clicked in the Station Data Report.	The <i>Set Report Options</i> item of the <i>Report</i> menu.

### Query Features

The Mass Update routine is controlled, and the content of a report is modified using a User-defined query specification. A query specification is a means of telling StationManager which records to display or modify. Only records that meet the specification are used, while records that do not match the specification are ignored. When used with the Mass Update routine, the query specification tells StationManager which records to change. When used with the Station Data report, the query specification tells StationManager which records to include in the report. When used with the report, multiple queries can be sequentially implemented.

The following table summarizes the StationManager query features:

<i>Desired Operation</i>	<i>Applicable Query Operator</i>
Find records equal to a specific value	Use the equal “=” operator.  For example, Size/Type Code = 4P. This would find all records where the Size/Type Code equals “4P.”
Find records not equal to a specific value	Use the not-equal “<>” operator.  For example, Size/Type Code < > 4P. This would find all records where the Size/Type Code is not equal to “4P.”
Find records less than a specific value	Use the less-than “<” operator.  For example, Pressure < 10. This would find all records where the Pressure value is less than 10.
Find records greater than a specific value	Use the greater-than “>” operator.  For example, Pressure > 10. This would find all records where the Pressure value is greater than 10.
Find records less than or equal to a specific value	Use the less-than-or-equal “<=” operator.  For example, Pressure <= 10. This would find all records where the Pressure value is less than or equal to 10.
Find records greater than or equal to a specific value	Use the greater than or equal “>=” operator.  For example, Pressure >= 10. This would find all records where the Pressure value is greater than or equal to 10.
Find all records	Use the “ALL” operator.

<i>Desired Operation</i>	<i>Applicable Query Operator</i>
Find records similar to a string value	Use the “LIKE” operator.  For example, Location LIKE Main St. This would find the records where the location values contain the string “Main St.”
Find records not similar to a string value	Use the “NOT LIKE” operator.  For example, Location NOT LIKE Main St. This would find the records where the location values do not contain the string “Main St.”
Find records with the smallest values	Use the minimum “MIN” operator.  For example, Pressure MIN 10. This would find the records associated with the ten lowest pressure values.
Find records with the largest values	Use the maximum “MAX” operator.  For example, Pressure MAX 10. This would find the records associated with the ten highest pressure values.
Find records that start with a certain string value	Use the “STARTS WITH” operator.  For example, Station Identification starts with “HP.” This would find all node records where the Station Identification starts with the string “HP.”
Find records that end with a certain string value	Use the “ENDS WITH” operator.  For example, Size/Type Code ends with “PE.” This would find all records where the pipe Size/Type Code ends with the string “PE.”
<i>Note - Some data items are not supported by some operations.</i>	

### Standard Dimensional Units

The following table describes the standard or “native” units used by StationManager in its Solution and Calculation routines. All other units are converted to these native units during the computations and then converted back to the original units when the computation is complete.

<i>Parameter Type</i>	<i>Standard Dimensional Unit</i>
Elevation	Feet
Temperature	Rankine
Pipe Diameter	Inches
Pipe Roughness	Inches
Pipe Length	Feet
Pipe Efficiency	Decimal
Pressure Drop	Psi
Velocity	Feet/sec
Viscosity	Lbm/Ft-sec
Volumetric Flow Rate	Cfh

### StationManager Files

The following table describes the various files used by StationManager. Depending on the nature and features included in a specific database and the routines used, some of these files may not always be present.

<i>Category</i>	<i>Filename</i>	<i>Description</i>
Program Files	sm20.exe	The StationManager program file.
	smgdi.dll	Contains the StationManager support functions.
	smlic.dll	Contains the StationManager license information.
Database Data Files	databasename.sdb	Contains general station data values.
	databasename.edb	Contains equipment data values.
	databasename.idb	Contains inspection data values.
	databasename.rdb	Contains hydraulic and equipment setting data values.
	databasename.dft	Contains default and global data values and various User settings and option values.
Property Tables	fitting.fpf	Fitting Properties table
	pipe.pfp	Pipe Properties table
	regulator.rpf	Regulator Properties table
	relief.lpf	Relief Valve Properties table
Temporary Files	databasename.opn	When present indicates that the database is open.
	randomnumber.sdb	When present contains the working copy of the general station data values.
	randomnumber.edb	When present contains the working copy of the equipment data values.
	randomnumber.idb	When present contains the working copy of the inspection data values.
	randomnumber.rdb	When present contains the working copy of the hydraulic and equipment setting data values.

<i>Category</i>	<i>Filename</i>	<i>Description</i>
Screen Initialization Files	StatMan.ini	Contains StationManager preference settings and default values.
	*.ini	Contains default values for various StationManager routines and data screens.
Back-Up Files	*.bak	Back-Up data file.

### StationManager Limitations

StationManager is a very powerful tool for managing and calculating data associated with a variety of types of pressure control stations. However, it does have some limitations. The “station capacity” of the software is related to the capacity of the particular version purchased; the remaining limitations apply to all versions. The limitations of StationManager are:

<i>Data Types</i>
The <i>Data Limitations</i> and <i>Database Definition</i> refers to a variety of data types. In the context of the descriptions contained in that table, the following data type definitions will apply.
<i>Double Precision Numeric</i> - Allows up to 15 significant digits. Unless otherwise specified, values of this type can range from $-1.7 \times 10^{308}$ to $1.7 \times 10^{308}$ .
<i>Integer Numeric</i> - Allows up to 5 significant digits. Unless otherwise specified, values of this type can range from -32000 to 32000.
<i>Long Integer Numeric</i> - Allows up to 10 significant digits. Unless otherwise specified, values of this type can range from $-2.1 \times 10^9$ to $2.1 \times 10^9$ .
<i>Single Precision Numeric</i> - Allows up to 7 significant digits. Unless otherwise specified, values of this type can range from $-3.4 \times 10^{38}$ to $3.4 \times 10^{38}$ .
<i>String Value</i> - Allows entry of various length alphanumeric (text) string values. Special characters are allowed.
<i>Date Value</i> - Allows date values in the MM/DD/YYYY format. Where MM means month in two-digit format, DD means day in two-digit format, and YYYY means year in four-digit format.
<i>Index</i> - Allows an item value to be entered by specifying an index value in a data list. The index value is generally generated internally by the software.
<i>Fixed String</i> - Used to enter various alphanumeric values, such as dimensional units. The index value is generated internally by the software.
<i>Boolean</i> - Used to enter a true or false, yes or no, or selected or unselected value. Options and responses are generated internally by the software.
<i>Component</i> - Used to identify a pipe or fitting component assigned to a piping section.



<i><b>Data Limitations</b></i>
The contents of this table list the absolute minimum and maximum values allowed by the various general parameters used in StationManager. The Database Definition contains descriptions of the various data items and their respective data types.
Record Capacity - Version and memory dependent.
Pressure values may be any floating point number in the range from minus one atmosphere to the maximum allowed single precision number.
Load and flow values may be any valid positive single precision number.
Pipe Diameter, Wall Thickness, and Roughness values may be any valid positive single precision number.
Pipe Lengths may be any valid positive single precision number.
Gas Properties may be any valid positive single precision number.
Temperatures may be any valid single precision number greater than absolute zero.
Elevation values may be any valid single precision number.
Dimensional units are restricted to those fixed string values displayed in the various data lists.
Up to ten images may be attached to a station record.
Up to ten components may be attached to a piping section.
Up to two runs may be configured for a station.
Up to two stages may be configured for each run.

### Supported Dimensional Units

StationManager uses a “standard” set of dimensional units for its internal calculations. When a value expressed in a different unit is encountered, it is converted internally for use by StationManager. The following table lists the supported dimensional units and the conversion factors used for internal use.

<i>Unit Group</i>	<i>Supported Types</i>	<i>Conversion Factor</i>
Coordinates	<b>Degrees L/L</b>	N/A - No Calculation
	<b>Lat/Long</b>	N/A - No Calculation
	<b>Feet, ft</b>	N/A - No Calculation
	<b>Kilometers, Kilometres, km</b>	N/A - No Calculation
	<b>Meters, Metres, m</b>	N/A - No Calculation
	<b>Miles, mi</b>	N/A - No Calculation
Diameter	<b>Centimeters, Centimetres, cm</b>	0.3937
	<b>Feet, ft</b>	12
	<b>Inches, in</b>	1
	<b>Meters, Metres, m</b>	39.37
	<b>Millimeters, Millimetres, mm</b>	0.03937
Efficiency	<b>Decimal</b>	1
	<b>Percent, %</b>	0.01
Elevation	<b>Feet, ft</b>	1
	<b>Meters, Metres, m</b>	3.281
Flow Rate	<b>Ccf/mo</b> (hundred cubic feet per month)	0.13689
	<b>Cfd</b> (cubic feet per day)	0.041667
	<b>Cfh</b> (cubic feet per hour)	1
	<b>Cfm</b> (cubic feet per minute)	60
	<b>Liters/min, Litres/min</b> (liters per minute)	2.1186
	<b>M3/d, M3d</b> (cubic meters per day)	1.47125

Unit Group	Supported Types	Conversion Factor
	<b>M<sup>3</sup>/hr, M3/hr, M3h</b> (cubic meters per hour)	35.31
	<b>Mcfd</b> (thousands of cubic feet per day)	41.667
	<b>Mcfh</b> (thousands of cubic feet per hour)	1000
	<b>Mcf/mo</b> (thousands of cubic feet per month)	1.3689
	<b>Mm3/d, Mm3d</b> (thousands of cubic meters per day)	1471.25
	<b>Mm3h</b> (thousands of cubic meters per hour)	35310
	<b>MMcfd</b> (millions of cubic feet per day)	41667
	<b>MMcfh</b> (millions of cubic feet per hour)	1000000
	<b>MMm3d</b> (millions of cubic meters per day)	1471250
Length	<b>Centimeters, Centimetres, cm</b>	0.03281
	<b>Feet, ft</b>	1
	<b>Inches, in</b>	1/12
	<b>Kilometers, Kilometres, km</b>	3281
	<b>Meters, Metres, m</b>	3.281
	<b>Miles, mi</b>	5280
Pressure (Abs)	<b>in-wc (Abs)</b> (inches of water column)	0.036092
	<b>in-HG (Abs)</b> (inches of mercury)	0.491154
	<b>Psi (Abs)</b> (pounds per square inch)	1
Pressure (Gauge)	<b>Atmosphere, atm</b>	14.7
	<b>Bar</b>	14.504
	<b>Feet H2O, ft-wc</b>	0.4335
	<b>Inches H2O, in-wc</b> (inches of water column)	0.036092
	<b>Inches HG, in-HG</b> (inches of mercury)	0.491154
	<b>KPa</b> (thousands of Pascals)	0.14504
	<b>Millibar, mBar</b>	0.014504
	<b>MPa</b> (millions of Pascals)	14504

Unit Group	Supported Types	Conversion Factor
	<b>Osi</b> (ounces per square inch)	0.0625
	<b>Pascals, pa</b>	0.00014504
	<b>Psi, Psig</b> (pounds per square inch)	1
Temperature	<b>Celsius, C</b>	$^{\circ}\text{C} * 1.8 + 491.67$
	<b>Fahrenheit, F</b>	$^{\circ}\text{F} + 459.67$
	<b>Kelvin, K</b>	$^{\circ}\text{K} * 1.8$
	<b>Rankine, R</b>	1
Velocity	<b>Feet/sec, FPS</b> (feet per second)	1
	<b>KMeters/hr, KMetres/hr, Kph</b>	0.91139
	<b>Meters/sec, Metres/sec, MPS</b> (meters per second)	3.281
	<b>Miles/hr, Mph</b> (miles per hour)	1.4667
Viscosity	<b>Centipoise, Cpoise, cp</b>	0.000672
	<b>Lbf-sec/Ft^2</b> (pound force second per square foot)	32.2
	<b>Lbm/Ft-sec</b> (pound mass per foot second)	1
	<b>Micropoise</b>	6.72 E-08
	<b>Pascal-sec, Pa-sec</b> (Pascal second)	0.672

### Temperature Calculations

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StationManager assumes that the gas flowing temperature remains constant throughout the station piping and devices. This, of course, is not true; however, the assumption results in conservative results in terms of pressure drop and flow capacity - it tends to overestimate pressure drop and underestimate flow capacity. No temperature calculations are performed as part of the StationManager calculation routines.



# GLOSSARY







### Glossary

The following table describes some of the terms associated with the StationManager database environment.

<i>Term</i>	<i>Definition</i>
Atmospheric Pressure	The pressure exerted on an object by the atmosphere. Defined in the <i>Support Equations</i> section of the <i>Appendix</i> .
Base Pressure	Refers to the pressure used as the basis for stating a volume or volumetric flow rate. Usually specified by tariff or sales agreement.
Base Temperature	Refers to the temperature used as the basis for stating a volume or volumetric flow rate. Usually specified by tariff or sales agreement.
Calculated Value	Display panels highlighted with a yellow background color represent calculated data values. The value cannot be directly edited by the User.
Database	The combination of various linked files that are used to represent the data used by StationManager, including the default data, station data, run data, equipment data, and inspection data.
Diameter	Refers to the Size/Type Code or inside diameter of a pipe segment.
Fitting	A piping component that represents an actual pipe fitting (For example, an elbow, tee, etc.) or a component that can be represented by an equivalent length value (For example, a valve).
Pipe	A piping component that represents an actual pipe segment, as opposed to a fitting.
Property Table	A set of data files that contain common data associated with the various pipes, devices, and fittings used by StationManager. Each Property Table contains specific information about the type it represents. For instance, the Pipe Property Table contains information on the pipe type features, such as the <i>Inside Diameter</i> value.
Schematic Data Interface	A line representation of the station.



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