NOTE

This manual covers the Wet Process (PWPM), Chemical Injection (PCIM), and Sequence Washer (PSWM) products.

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SSI Part # MANUAL-PWPM

PulseNet Wet Process Module was written by
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INTRODUCTION

CONVENTIONS USED IN THIS MANUAL

Certain words are emphasized to convey a special meaning. In general, they are:

*italics* - used to stress a word's importance.
*bold* - indicates a standard term used in PulseNet.
"any words" - parentheses indicate verbiage on the screen, or something you should type.
*[Enter]* - square brackets refer to keys on your keyboard.

OVERVIEW

PulseNet Wet Process Module (PWPM) is an application program which allows an IBM or compatible personal computer to communicate with the MicroPulse family of machine controllers. Washers equipped with MicroPulse controllers work independently from the PulseNet system; however, the true power of the automation provided by the controllers is realized when they are combined with PulseNet. While each controller runs formulas, accumulates data, and keeps track of machine status, the PulseNet Wet Process Module enables:

♦ Creating and/or editing washer formulations via personal computer (PC).
♦ Production data collecting.
♦ Chemical usage and cost monitoring.
♦ Production and efficiency reporting.
♦ Computer monitoring of washer status.
♦ Chemical inventory and utility usage reporting.

One of the most important and frequently used features of PWPM is the ability to create and edit formulas in a user-friendly environment. A *formula* is a list of instructions that control a washer from the beginning to the end of the wash cycle. (For example: Fill with hot water to a level of 10 inches, Add two cups of bleach, Wash for 5 minutes, and Drain.) With the PulseNet
system, these formulas are easy to create. A formula can be made up entirely of individual instructions, or it can contain operations. An **operation** is a series of frequently used instructions, grouped together and stored as a unit for easy insertion into a formula. This reduces repetitive entry of common tasks, and allows formulas to be quickly created or modified.

To make formulation manageable, individual machines are organized into groups. A **group** is a set of machines that use the same formulas; for this reason, groups usually contain machines of the same manufacture, capacity, and features. In addition to formulas, groups share the same **chemical assignments**. The set of chemicals used in each group of formulas may be individually assigned. For example, a group of 125 lb. washers may use 5% bleach in ounces, whereas a group of 800 lb. washers may use 15% bleach in quarts. While most formula specific data is maintained on the group level, other data is saved on an individual machine basis.

Machine specific data includes calibration of water levels and automatic chemicals, passwords enabling various machine functions, and **watchdogs** which alert operators or maintenance personnel to problems with an individual machine.

Data from individual or groups of machines may be **uploaded** to the personal computer. Uploading reads the data stored on the controller and stores it on the PC. This is useful for maintaining backup calibration data, washer setup and historical data, as well as formula run and chemical usage data necessary for producing reports. Data may also be **downloaded** to an individual machine or the entire group. This process, the reverse of uploading, takes data from the PC and writes it to the machine controller. This would include programmed formulas or previously saved calibration or setup data. All machine communication can occur **without regard to the current state of the machine**. This means that a machine can be running a formula while the computer uploads chemical usage data. In fact, PWPM allows the operator to **monitor** one or all of the machines while they are running.

As easy and convenient as formulation is, PWPM is much more than just a formula editor. It allows the Production Manager to access the data stored in the MicroPulse controller, and present it in numerous reports. These reports include:

- Production reports showing poundage and units of garments processed.
- Efficiency reports which display formula run times, both standard and actual.
- Historical reporting of formula runs, chemical usage, password entry, and watchdogs.
- Chemical inventory reports which help the Purchasing Manager calculate and forecast buying.

There is even more to PulseNet, and all it's features are contained in this manual. We at Softrol recommend you read it in it's entirety before using PulseNet, so that you may take full advantage of it's power and many time-saving features.
INSTALLATION

SYSTEM REQUIREMENTS

♦ An IBM or 100% compatible PC with a Pentium 4 1.3 GHz or higher processor.
♦ Microsoft Windows 2000, XP, or Vista.
♦ A minimum of 512 Megabytes of system RAM (1 Gig or higher recommended).
♦ Super VGA monitor capable of 1024 x 768 with High Color (16-bit) or better.
♦ One available USB or parallel printer port.
♦ Approximately 4 Megabytes of free hard disk space (see NOTE below).
♦ For ArcNet communications, a desktop needs a PCI half-slot, and a laptop needs a USB port.
  For the older RS-485 communications, an open full-length slot capable of accepting an ISA expansion card is needed.

NOTE

If you will be gathering and storing data from the controller(s), allow extra hard disk space for the storage of this data. As an example, a washroom with ten machines that gathers data on a daily basis would need about 40 Megabytes for a year's worth of data. This database may be purged and its size reduced at any time.

To aid you in your own calculations, each machine's entry in the database takes up about 16K (16,384 bytes) of disk space. Therefore, if you had 13 machines hooked into PulseNet, each Read/Save/Reset (see the Database section in this manual) would add about 208K (212,992 bytes) to the database size.

THE ARCNET NETWORK

ArcNet communications requires the use of active and/or passive hubs. These hubs are connected via coaxial or twisted-pair cable to ArcNet cards installed in the PC and in each machine. Coax connectors are of the BNC twist-off type, while twisted-pair terminates in terminal blocks. This network is usually installed by Softrol personnel, as every plant
configuration is unique.

ArcNet networks are many times faster than the older RS-485 networks, and are much easier to maintain and troubleshoot. Their speed and reliability alone make them the network of choice, particularly for large plants.

INSTALLATION PROCEDURE FOR ARCNET NETWORKS

♦ Make sure all washers to be connected have ArcNet cards installed in their Softrol card cages.
♦ Although "daisy-chaining" machines is allowed, the preferred method of cable routing is the “star” configuration, where each machine has it’s own independent branch from the hub. If daisy-chaining, there is an eight-machine maximum per branch. Be sure to terminate the last ArcNet card in each branch. This can be accomplished with a jumper on the card itself, or by using a terminator on the connector.
♦ Install the special ArcNet card in the PC (usually part number PCI20-CXB or PCI20-CTB).
♦ Run cable from the PC to the hub (star configuration), or first machine in the "daisy chain".
♦ Install the PulseNet Wet Process Module by following the instructions printed on the CD.

THE RS-485 NETWORK

Softrol no longer installs RS-485 networks. They have been replaced with the much faster and noise-immune ArcNet scheme. RS-485 is still supported through our legacy program, and any questions should be addressed directly to Softrol.
RUNNING PULSENET FOR THE FIRST TIME

Softrol OEM's our products to several other companies. The first time PWPM for Windows is run, it will ask the user to select the appropriate controller manufacturer. This tells the Main Menu of PWPM to display "PulseNet", "DataLink", or some other name for the product line.

Also, you will be asked permission to create two default data files. You need to let the program create these files. If they ever get accidentally erased from your system, PulseNet will again ask permission to create them. If this occurs, just answer "Yes", and the program will create default versions of the missing files.

Users who are upgrading from any previous 128 Formula version may skip this next section; however, all others are urged to read and follow the procedures outlined. This includes new installations as well as customers converting from an older 32 formula version of PulseNet.

When first installed, PulseNet's data and support files are basically empty, although some may contain generic data to get you started. In addition, the machine controllers contain data you will want to bring to the PC (upload), and some data that you will want to initialize.

**CAUTION**

*Do not download any data from the PC to the controller until you have followed the steps outlined in this section. Failure to do so may result in loss of valuable data on your controller.*

Please refer to the corresponding sections in this manual for details on performing the following steps:

1. PulseNet’s “Setup” menu is designed for it’s selections to be done one at a time, from top to bottom. In other words, if you perform the duties in the Setup menu from top to bottom, you have performed all of PulseNet’s setup duties, and you have done them in the correct order.

2. New installations should enter the company's name and address in the Configure Plant Location dialog.
3. The communication mode should then be set with the Configure Ports dialog. There are “Help” and “System” buttons located in the Configure Ports dialog to assist you in doing this.

4. Lastly, specify group names and controller types, and assign machines in the Configure Groups dialog.

5. Upload the vocabulary files for each group in the Edit Vocab Files dialog if they have been entered on the controller. You may also want to download them at the group level to insure all machines use the same set.

6. Upload the configuration for every machine in the Machine Configuration dialog. Do this only after the setups have been entered on every controller you upload from.

7. Perform a Reset Machine, located in the “Machine” menu, choosing “Both” when prompted. This will clear the controllers and PulseNet data files of uninitialized values. Then perform a Read/Save/Reset. This first R/S/R will contain no data and will not be used in reporting, but is needed as a starting point.

8. If you have already entered formulas on the machine controllers, upload them from at least one machine in every group (use “Upload Formula Data” from the “Machine to PC Communications” submenu). This enables you to modify and sent back to the machines when needed. Otherwise, you will have to create your formulas from scratch with PulseNet’s formula editor (unless you have a formula backup disk from another plant within your organization - see the Backup and Restore sections of the Formula Editor chapter).

9. If you want to insure at this time that all machines contain the same formulas, you may do a Group Formula Update.

10. For each machine, upload the calibrations from the “Machine to PC Communications” submenu.

There are other setup duties you may perform later to insure accurate reporting and costing, and they are explained next. The above steps, however, are enough to insure that uninitialized data does not write over good data in the controller.

**SETTING UP REPORTING**

In addition to the “Running PulseNet for the First Time” section presented previously, there are several duties that are required to insure accurate reporting and costing information. As before, refer to the appropriate sections of this manual to guide you through the various tasks.

1. Use the Configure Supply Inventory Data dialog to enter all chemical supplies stored in your warehouse. These supplies and their units of measurement have nothing to do with the chemical names or units displayed on the actual machine controller. It is a master list of 100 supplies from which each group may pull up to 50 chemicals to use in the machines. Accurate costing of the purchased units is essential for precise chemical cost reporting.

2. If you had no vocabularies in the machine controller to upload, you must enter them in the Edit Vocab Files dialog. For each group, enter up to 50 chemical names and up to 25 chemical units. These chemicals and units are the ones that will be displayed on the controller.
3. The Edit Chemical Assignments dialog is where you relate the supplies to the chemicals. For each chemical, select the appropriate unit of measurement the machine formulas will use. If you will be doing RatioMetric chemical additions (see Glossary), also enter the Units/Lb. Very important to accurate costing is the assignment of one or more supplies (usually just one) to each chemical. Equally important is the setting of the Amount. It is essential that PulseNet know how many supply units are contained in each chemical unit.

4. In the formula editor, you must set the yield of each formula for accurate reports that deal with weight or count. If the machine controller does not prompt for weight on each load, or it is not supplied through an automated system, PulseNet reports will use the weight assigned to the formula in the editor as defaults.

5. Edit Standard Times should be used to more realistically represent each formula’s actual run time, to update the estimated times, and to provide efficiency figures.

6. If you wish to classify your laundry and obtain plant throughput based on these classes, you must set up the classifications in the Configure Classification dialog. This allows you to assign a class to each formula in the editor.

7. If you wish to keep track of utility usage in your plant, you must set up these utilities in the Configure Plant Utility Data dialog.

These steps will insure accurate reporting throughout PulseNet. Bear in mind that you still need to provide raw data for the program to work with. For all reports dealing with totals, you must do regular Read/Save/Reset’s to gather accumulated chemical usage and formula run data. Read/Save/Reset’s do not gather historical data. For all historical reports, you must also upload the stored histories on each machine. R/S/R’s may be setup to occur automatically, and while you may upload histories manually, it is wise to have PulseNet upload them automatically during each R/S/R.
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THE MAIN MENU

The title bar of the window will display the program name and version. The line directly beneath this is called the menu bar, and displays all the menus in a horizontal list. Some menus have submenus associated with them. In the center of the screen is the info box, which contains various data. Along the bottom is the status bar, which displays the current site, the current user, and the active assay associated with the current group.

The data in the info box consists of the plant name and address, the currently selected group and machine, the date and time, the time of the next AutoRSR (if enabled), and the path on your hard drive (or network) where PulseNet resides. To the left is the toolbar, which is a collection of shortcut icons (called toolbuttons) for various menu selections. The bottom ten toolbuttons also correspond to function keys [F1] through [F10]. You may click on these icons instead of
using the menus.

The rainbow toolbutton in the info box allows the user to set the background color. The choices are Default, Classic, and Custom. Default displays the new blue gradient pattern, Classic returns the background to its former solid dark blue, and Custom allows the user to define the colors used in the gradient pattern. If a solid color other than the Classic blue is desired, simply use the Custom method and set the Top Color and the Bottom Color the same.

All other toolbuttons are shortcuts to selections in the menu structure.

**SOME BASIC TERMS AND CONCEPTS**

For brevity and clarity, most of the manual will refer to the use of the mouse. Although a mouse is highly recommended, the user may use the keyboard instead.

The terms **dialog** and **focus** will be used throughout the manual. A dialog is simply the screen you work in as the result of selecting an item from the Main Menu. These dialogs are pictured throughout the rest of this manual. Dialogs contain all the information you need to perform the job at hand. These include **list boxes** or **grids** which display a vertical list of possible choices, **text boxes** which allow you to type in your responses, and **buttons** which perform specific tasks.

Focus refers to the currently active object in the dialog - the one which will react to mouse or keyboard activity. Focus can be moved either by clicking on the object with the mouse, or using the [Tab] key. When a list box has the focus, a dotted rectangle appears around the current selection (usually enclosing the **highlight bar**). On a grid, the entire row is highlighted. The highlight bar is the colored bar which covers the currently selected item in the list. When a text box has the focus, it contains the blinking cursor, and its text is frequently highlighted. Lastly, when a button has the focus, its text is enclosed in the dotted rectangle mentioned above. Hitting [Enter] when a button has the focus is the same as clicking it with the mouse.

If a button has a bold border when no other buttons have the focus, that is the **default button**. Pressing [Enter] will activate the button, **no matter which object has the focus**.

The [Esc] key will perform the same function as the "Cancel" or "Exit" buttons in most situations. In addition, "double-clicking" on an item in a list box will sometimes perform the same function as the default button.

Most report dialogs contain a special button with a picture of a graph on it, some only visible when the data is sorted. Clicking a graph button will display the data in a bar chart. These charts have many features and capabilities, all of which are explained by its own on-line help. See the “Using the Charts” Appendix for more information.
OVERVIEW

The Setup menu customizes the PWPM system to match the machines installed on the washroom floor, defines the bulk chemical supplies, utilities, and classifications of laundry, specifies the computer’s communication port and printer, configures each group used in the plant, sets system defaults, and allows management of different sites. The Setup menu selections are arranged in order, so going through the menu from top to bottom will have you up and running quickly.

CONFIGURE PLANT LOCATION

The Configure Plant Location dialog allows the user to enter the name, address, and plant ID of his particular site. This information is reproduced in the header of all reports generated by PulseNet.

CONFIGURE PORTS

Use this dialog to set the communication method(s) your computer uses to talk to the machines. Up to four network cards may be defined, although the norm is just one. Only select “Serial” mode if you are using an RS-485 network, or an RS-232 COM port. RS-485 networks daisy-chain all machines to an Opto card in the PC, while RS-232 uses a standard COM port to talk to a single machine. The usual communication mode, however, is ArcNet, and the current cards being installed in desktop computers are of the “Type 2” variety, while laptops use the USB version.
The ArcNet modes use a twisted-pair cable with terminal block and RJ-45 connectors. Make sure the address (and offset for Type 1 cards) match those of the ArcNet interface card in the computer. Typical settings are ArcNet Type 2 and PC ID # 255. Click the “Help” and “System” buttons for assistance in finding the I/O Address.

Note that the “ArcNet USB” mode can currently handle only one communicating program at a time. That means if you have two PulseNet programs installed, such as the Wet Process and the Dry Process modules, only one of those programs may be accessing the ArcNet at any given time. Therefore, make sure both programs are not set to do Automatic Read/Save/Reset’s at the same time, or any other type of communication, such as downloading formulas.

For serial communications, the proper settings in Windows’ Control Panel are required. You must open the “System” icon, then click on the “Device Manager” tab. Select the appropriate port and click on the “Properties” button. In the “Port Settings” tab, both RS-485 and RS-232 require settings of 19200 bits per second, with eight data bits, no parity, and one stop bit. If RS-485 is being used, you must also set “Flow control” to “Hardware”. In addition, RS-485 requires that you duplicate any custom addresses or interrupts on the Opto card in the "Resources" tab. A common RS-485 setup is to use COM 3 with an Input/Output Range of 03E8-03EF and an Interrupt Request of 5.

EtherArc is a new communication method, and involves transmitting ArcNet packets over normal EtherNet cables. This requires a dedicated PC to be the ArcNet “server”, but all other PC’s need no ArcNet cards, just an EtherNet connection. For this mode, the IP Address of the local PC, the IP Address of the server, and the Port number of the server must be specified.

Be sure to set the total number of networks in the “Total” list box, and select and define each number. For example, if you have two network cards, there will be 2 total networks, #1 and #2.
CONFIGURE GROUPS

This dialog allows the user to set the number of groups used in the plant, and to configure these groups. A group must be a set of individual machines that all use the same formulas. For this reason, the machines in a group are usually of the same manufacture, capacity, and features. Once the number of groups has been calculated, that number of groups should be created with the “Add” button. Then you can use the “Name” button to descriptively name each one. PulseNet, if installed and set up correctly, should already have one group defined, Group #1. Groups are always numbered sequentially, starting at #1. You cannot skip numbers.

For each group defined in this dialog, there is a group folder on the hard disk. It is directly under the program’s site folder, and is named "Gx", where "x" is the group number. A typical group folder would be "C:\PWPM\HOME.SIT\G1", and this is where group #1’s formulas and other group-specific data for the “HOME” site is stored on the PC. Never delete these group folders from the system yourself. PulseNet will delete them itself if needed.

Next, for each group, it is important to select the type of controller actually installed on the machines. To change the type of controller, position the highlight bar in the "Controller Type" grid over the correct entry. You may view the associated graphic by clicking the “Preview” button.

Each group has settings for Water Totals. The four waters used are Cold, Hot, Third, and Fourth. The Third and Fourth waters are frequently “reuse” water that has already been used, but treated and recirculated back into the system. For this reason, most plants do not want to include the amount of reuse water in their total fresh water consumption. For each group, only those waters checked will be included in the total water usage reporting for the plant.

Next, in the “Formulas” box, select the number the machines can handle, usually 128. Lastly, there is a blue check box called “Use Oz/CWT”. When checked, it allows the selected group to
have chemicals added by the ratio of Ounces per Hundred Weight of goods. For this scheme to work, the “Units/Lb” for the chemicals must be set to 10. See the section on “Edit Chemical Assignments” for more information on this.

Now, individual machines need to be assigned to their respective groups. To add a machine to a group, click on the "Insert" button, or hit the [Insert] key. It does not matter where the highlight bar is in the Members list box - new machines will automatically be added in sequence. You will then be asked for the new machine number - it must be between 1 and 255, inclusive. It will be added to the group currently highlighted in the group list box, unless it is already assigned to another group. If so, an error is displayed.

For each machine in the “Members” grid, you must set which network it is hooked up to. These networks are setup in the “Configure Ports” dialog discussed earlier. Simply highlight each member, then select the correct network from the “Network” drop-down list box.

Also, individual machines may be marked as “Offline” when they are down for an extended period, such as for maintenance. This causes the machines to be automatically skipped during plant and group-level operations such as R/S/R’s and Group Formula Updates.

To delete a machine from a group, position the highlight bar over the desired machine with the mouse or arrow keys, then click the "Delete" button or hit the [Delete] key.

Groups may later be deleted. To delete a group in the list, simply highlight the group to be removed, and click the “Delete” button under the Group grid. When a group is deleted, you will be prompted to delete the unused group and machine folders to save disk space. This is a good idea if you no longer need that group or any of it's data. Be sure, however, because all data pertaining to that group, including formulas, will be permanently lost.

**WARNING**

*When groups and their associated machines are deleted, Summarize Period (discussed later) is affected. If dates are chosen prior to the deletion, the affected machines will not display any report data. This is because machine data is only pulled from the database if the machine still belongs to the group it was in at the time of the Read/Save/Reset.*

You may print a listing of your group configuration by clicking on the "Print" button. To save your changes, click on the "Save" button. To discard them, click on the "Cancel" button.

**CONFIGURE SUPPLY INVENTORY DATA**

Supply Inventory Data refers to the bulk chemicals bought from your chemical vendors and stored in your warehouse. The names and units of these chemicals should correspond to how they are ordered from the supplier. The cost per unit should then be calculated from that data.

For instance, if you buy Sodium Hypochlorite in 55 gal. drums for $50.00 a drum, your Unit would be gallons, and your Cost/Unit would be $50.00 divided by 55 gal., or $0.91 per gallon.
Do not confuse these chemical supplies with the chemicals actually used on the washroom floor and displayed on the machine controllers. For example, although you may buy Sodium Hypochlorite in gallons, you probably use it on the floor as Bleach measured in ounces. The relationship between the inventoried supply chemicals referred to here and the actual chemicals used in the washroom will be defined later in the Edit Chemical Assignments dialog.

You can have up to 100 inventoried supplies. Later, up to 50 "floor" chemicals will be assigned to these supplies on a group basis. Compounding of chemicals is also possible (a floor chemical can be made up of more than one supply chemical).

To assign or change a chemical supply name, click on the "Name" button and enter the new name when requested. In a similar fashion, the Unit and Cost/Unit may be entered.

The Weight-to-Volume icon is used for supplies bought in dry weight units, but used in fluid units. Converting weight to volume makes the Edit Chemical Assignments dialog go much smoother. Click on the icon and enter the total weight purchased, the specific gravity of the supply, and the total cost of the amount purchased. If you already know the cost per unit (such as $1.00 per pound), you can enter “1” for the Total Weight, and then the known cost per unit. The Unit and Cost/Unit columns will be filled in automatically.

Clicking on the "Print" button will print the list. Use the "Save" button to save your changes, or the "Cancel" button to discard them and return to the Main Menu.

**CONFIGURE PLANT UTILITY DATA**

This dialog is optional, for users wanting utility usage displayed in some of the PulseNet reports. Up to 12 utilities may be tracked.

To change a utility name, first highlight it in the list box, then click the "Name" button.
will be prompted for the new name. The Meter Unit, Cost/Unit, and Max Value may be changed likewise. Here is an explanation of these settings:

Name - the common name of the utility.

Meter Unit - the purchase unit of the utility, equal to one meter click. In the example picture, the water meter dial is marked off in units of 10 cubic feet, which is how the customer is billed.

Cost/Unit - the cost of one Meter Unit of the utility.

Max Value - the value your meter represents when it “rolls over” to all zeroes. Think of it as an odometer on an older car - when it goes to “00000.0” it has gone 100,000 miles.

**CONFIGURE CLASSIFICATION**

This dialog is also optional, allowing laundry to be grouped into different classifications, depending on the material and/or purpose of the goods. Then specific formulas can be assigned.
to these classes, allowing the Plant Manager to produce a report tracking the plant output of each type of laundry. There may be up to 128 different classifications.

To edit a name, click on the "Edit" button or hit [Enter] while the desired entry is selected. To remove an existing classification, click the “Delete” button.

**EDIT VOCAB FILES**

This selection is the first of three “group configuration” dialogs that must be completed for each group. It enables the user to edit the names of the formulas, operations, chemicals, and chemical units. It also allows modification of operator prompts and maintenance messages. Bear in mind that this dialog works on the vocabularies stored on the PC. They may or may not match those actually on the machine controllers, as they may have been changed since the last upload or download, either at the controller or through PulseNet. Therefore, to insure that you are looking at the current vocabs on the controllers, you must first upload them to the computer.

To upload the current vocabs from the machine, click on the "Upload" button. You will then need to select a machine in the current group from which to upload. This will transfer the vocabularies from that controller to the PC.
If you wish to use the same vocabularies already in another group, you may import them. Importing takes data from another location on the PC and brings it into your current work area. In the case of vocabs, this means copying the vocabs from another group to the current group. This is useful when adding a similar group to your current group configuration. To import, click on the "Import" button, and select which group you wish to copy from.

To edit a vocabulary, highlight the desired selection. Then either click the "Name" button or hit the [Enter] key. To delete a vocabulary, highlight the desired selection and either click the "Delete" button or hit the [Delete] key. The “Print” button will print the desired names.

To save your changes, click on the "Save" button. Remember that this only saves the vocabs to the PC. If you wish your changes to be reflected on the washers (which is the usual case), you must also transfer them to the machine controllers by clicking the “Download” button. You may download to the currently selected machine, or to the entire group of machines.

If you click on the "Use Filter" check box, the vocabs will be filtered for unusual characters every time they are read from or written to the PC. This is most useful for new machines or conversions, as the vocabs frequently contain garbage characters. Be warned, however, that this will also remove the degree symbol (char 248) which some customers like to use.

You can click the "Change Group ID" button to work on the vocabularies from other groups, and the "Exit" button to discard your changes and return to the Main Menu.

**EDIT CHEMICAL ASSIGNMENTS**

This selection allows the user to establish the relationship between the inventoried chemical supplies (entered in the Configure Supply Inventory Data dialog) and the chemicals actually used on the washroom floor. This is a rather "busy" and intimidating-looking dialog, but it is actually very user friendly and easy to use.

PulseNet allows up to 50 chemicals to be used in formulation. These 50 "floor" chemicals are made up of one or more of the 100 inventoried supply chemicals. This dialog allows the user to customize each of the chemicals used in a specific group.

The chemical grid at the top specifies the floor units (how the chemical is actually measured and added to the washer), the cost per unit, compatibility with steam, and the units per pound (or kilogram) of the chemical. Units per pound specifies how many of the units are contained in one pound of the chemical, and is important for ratiometric chemical additions. This is where chemicals are added not by a fixed volume or weight, but by a percentage of the load weight of the washer.

If “Use Oz/CWT” was selected for the group in the Configure Groups dialog, the “Use Oz/CWT” check box should be checked here. When checked, it fills chemicals #1 through #16 with a value of 10 for Units/Lb. This is necessary for the entry of ounces per hundred weight in the formula editor to function properly. Be sure to save these changes when clicking this check box.
To change a chemical name, highlight it in the grid and click on the "Name" button. You will then be asked to input the new name. These names should be kept as generic as possible, so any name changes to the proprietary supply chemical do not affect floor personnel. To change the unit, highlight the desired entry in the "Unit" list box. If you do not see the unit you need, you must define a new one with the "Edit Vocab Files" dialog - they cannot be changed here. Bear in mind that these names and units are the ones that will be displayed by the machine controllers.

Setting a chemical to the first unit (Sec.) will cause the program to auto-calibrate the seconds upon saving. The correct procedure would be to upload the calibrations for all machines in the group, set the desired chemicals to seconds, then download the calibrations.

If the chemical is compatible with steam injection, check the "Steam" box. If a tunnel washer group is selected, a "Compartment" button appears instead. Select the compartment in which the chemical is used. Use the "Unassign All" button to reset new groups to all unassigned chemicals. For a Catalyst Plus group, "Sensor" appears. Select the correct sensor if applicable.

If you are using ratiometric chemical additions, click on the "Units/Lb." button and set this value; otherwise, you may ignore this column, or set all values to zero. You may enter the value directly, or enter the chemical’s specific gravity and let the program calculate it.

The component(s) used to make up the chemical are listed in the component grid at the bottom of the screen. These components are taken from the 100 inventoried supplies entered in earlier
with the Configure Supply Inventory Data dialog.

A floor chemical is usually a single supply chemical, merely renamed and measured differently for the convenience of the washer operators. However, it can be composed of up to eight supply chemicals. The component grid allows up to eight components to be specified. To add a component, merely click on the “Add” button and make a selection. To modify a previously-entered component, move the highlight bar to the desired entry and click “Edit”. To delete components, use the "Delete" button.

For each component, you need to tell PulseNet how many inventory supply units are in a floor unit. In the example, the supply is Sodium Hypochlorite, which is inventoried in gallons. However, it is used on the washroom floor as Bleach measured in ounces. Since there are 128 ounces in a gallon, there are 1 divided by 128, or 0.007812 gallons of Sodium Hypochlorite in every ounce of Bleach. Enter this amount when adding or editing the component.

You may work on other group’s chemical assignments by clicking "Change Group ID" button.

Click the "Save" button to save your changes. “Print” prints the assignments (and optionally the supplies used). The "Import" button saves time when setting up a new group by copying all needed information from another group into the current one. The “Exit” button exits the dialog.

**EDIT STANDARD TIMES**

The last “group configuration” dialog allows the user to define the standard times used in computing formula run times. The **Estimated Run Time** of a formula is calculated by adding all the times specified in the formula's instructions (Run Time, Drain Time, etc.), then adding all applicable times from this dialog. This Estimated Run Time is very important in calculating efficiencies for various reports.

![Edit Standard Times](image)
The times, measured in seconds, should be an average and as accurate as possible. For example, the "Time to load" value should be the average time it takes an operator to load the washer under normal circumstances. Also included is a Labor Time Factor, which should be the average earned employee man-hours per load.

To edit an item, click in the text box and type in the new value. To save your changes, click on the "Save" button. To discard your changes, click on the "Cancel" button.

You may click on the "Change Group ID" button to select another group for editing. The currently selected group is displayed at the bottom of the dialog.

**SYSTEM DEFAULTS**

This menu selection allows editing of the default settings used by the PulseNet program. The global language may be selected in the Miscellaneous frame. This is the language PulseNet will
use if security is not enabled. If it is, each user has his own personal language setting. Three languages are available - "ENG" for English, "ESP" for Español (Spanish), and “FRA” for Français (French).

The Heartbeat icon will start the Heartbeat utility (available separately), which will monitor the PulseNet program and insure it keeps running, thereby not missing any R/S/R’s.

The names of Operations 33 through 64 may be set to match those of the controller. In most cases, the "OP33" set for the current language should be used.

If “Bold Font” is checked, most dialogs will display text in a bold font (this is the default). Likewise, the "Metric System" selection will cause all displayed data to be in the metric system. “Warning on Exit” requires the user to confirm that he wishes to leave PulseNet. This is to insure that the program stays running for scheduled automatic Read/Save/Reset’s.

In the Thermo Water frame, you may set thermo water to "Defaults" or "Manual". Defaults causes any thermo water instruction in the formula editor to use hot water if the bath is too cold, hot and cold together if within range, and cold if too hot ("H-HC-C"). These defaults may be changed by clicking the "Edit" button. Manual selection will prompt you for the valves every time such an instruction is inserted or edited.

In the Read/Save/Reset Machine Data frame, the R/S/R’s may be customized by the user to fit his exact needs. The “Manual” option disables automatic data-gathering, “Automatic R/S/R” performs up to three R/S/R’s a day without user intervention, and “Automatic R/S/R & Translate Database” adds CSV database output.

The times of the automatic R/S/R’s may be set in the "Auto R/S/R Time" box by clicking the "Edit" button. Any unused times must be set to "00:00" (which normally signifies midnight). To specify an R/S/R at midnight, schedule it one minute before or after, such as "23:59" or "00:01". For example, to do an R/S/R at 7:00AM every morning, set the times to "07:00,00:00,00:00". For 8:00AM, 4:00PM, and 12:00AM, use “08:00,16:00,23:59”. The program must be running as each time is reached, or no R/S/R will be performed.

A “Look-back Time” setting is available to check for missed R/S/R’s. If the program is started and a scheduled R/S/R was missed, it is performed immediately, as long as the next scheduled R/S/R is less than thirty minutes away. The length to time to “look back” for missed R/S/R’s is adjustable by the user.

There is little advantage in pulling more than one R/S/R a day, unless the “Shift Reporting” box is checked. The only advantage in doing multiple daily R/S/R’s with “Shift Reporting” unchecked would be the ability to view reports encompassing a single shift on a single day.

The "Shift Reporting" check box indicates whether or not to ask the user for shift information. If checked, this information is requested for every Read/Save/Reset and Summarize Period. This feature allows periods to be summarized based upon shift. For example, the user can request reports for a single shift that cover an entire week. This makes comparing each shift’s
production easy. If no shift is specified when summarizing a period, all shifts will be included in the reports. The feature may be turned off or on at any time without any damage or loss of data to the database.

Additionally, a CSV translation can occur immediately after an AutoRSR. This feature translates Softrol's data into a CSV file, readable by other programs. The CSV is stored in the absolute path specified in the "CSV Path/File" box. Up to two file destinations may be selected.

For regular uploading of machine histories, check the “Also upload history” box. The histories from all machines will be uploaded after each automatic R/S/R. Additionally, if the machines need to be put to sleep (such as at the end of the production day), one or more R/S/R’s may be checked in the “Sleep machines after R/S/R” section. This will cause the machines to be put to sleep after the R/S/R, and it’s optional history upload, have taken place.

The “Error Checking” check box will enable “double-reads” of data from the controllers. This makes the R/S/R take twice as long, but can many times clean up data from a noisy network.

The “Terminate Plant Monitor before R/S/R” check box will cause that PulseNet program (PPMM) to exit, if the plant is currently being monitored, before the automatic R/S/R begins. This might be necessary if both programs are using the same ArcNet card in the PC.

As each AutoRSR begins, you will be warned to return to the Main Menu in 60 seconds. Clicking "OK" will hide the countdown and allow you to do so. **You may be editing formulas or viewing reports during an R/S/R, but most other dialogs or any machine communications will cause program failure!** Clicking "Pause" will freeze the timer, in case you need more time to prepare (such as turning on any off-line machines). The "Cancel" button will abort the entire R/S/R and any options. If the AutoRSR is unattended, off-line machines will be skipped, and the "Shift Reporting" option will use the default entries.

The “Database” section specifies how the program finds and connects to the database. Usually, the database type is “Jet” (in blue), and the settings shown should be used.

**PRINTER SETUP**

This is the standard printer setup dialog used by most Windows programs. Please refer to your Windows and printer manuals for more information.

**SELECT SITE**

This menu selection allows the user to change sites. A site contains all data specific to a particular plant location. You may also click on the site name in the Status Bar to change sites.

**SITE MANAGEMENT**

Site management is offered for those users who travel to multiple installations. Each site has its own separate setup (groups, machines, etc.) as well as formula and chemical information. You
may also create extra sites for experimentation purposes.

Additional sites may be defined by clicking the “New” button, and entering a new unique name. To rename a site, click the “Rename” button and enter the new name. “Delete” will display all sites, and any site may be chosen except the current one.

“Store” and “Retrieve” are used to backup and restore any site’s data via ZIP files. To include or exclude the Read/Save/Reset and main PulseNet database, set the “Include database” check box accordingly. The main database is Microsoft Access compatible and is named PulseNet.mdb. This type of database is often referred to as a “Jet” database, in reference to the data engine employed. Most PulseNet installations use this Jet database, but some use the Microsoft SQL Server database.

If using SQL Server, the “Export SQL to Jet” check box is available. If checked, the SQL Server database will be copied to the main PulseNet database. This makes it easy for users who don’t have SQL Server installed on their PC’s to restore a backup from one that does, and still be able to view the data.

The zip files may be placed on a floppy and carried to another computer for retrieval. It is wise to store your sites at least once a month in case of accidental data erasure or computer failure.

When retrieving a backup, you will be asked to keep the current database if one exists. Doing so will prevent the restoring of the database from the backup, overriding the “Include database” check box. This way, restoring backups will not cause any R/S/R’s done since the backup to be lost.

The “View Comments” button displays comment information stored inside the site backup file.

The Automatic tab deserves additional discussion. By default, site backups are done in the background every day at 12 noon. The latest seven backups are kept, in case the user needs to roll PulseNet back to an earlier state. All options concerning this process, even disabling it, can be set on this page.
An excellent backup scheme would be to direct the automatic site backups to a removable device, such as a USB “memory stick”. Small memory sticks are inexpensive these days, and plug directly into your USB port. Just use the “Browse” button to locate the memory device, making it the “Backup Folder”. By placing the backups there, the user is protected even from a hard drive crash.

EXIT

This menu selection, or the [Esc] key, exits PulseNet and returns to Windows.
GROUP MENU

OVERVIEW

The group menu performs functions at the group level. All dialogs will include data from all the individual machines contained in the currently selected group. Formulas and operations may be edited, and sent to all machines in the group at one time.

EDIT FORMULAS & FORMULA CARD EDITOR

The formula editors are very user friendly, yet feature-rich dialogs which enable the user to edit and print both formulas and operations from the PC. Due to the importance and number of features contained in the editors, there are entire chapters devoted to them. Please refer to the "Formula Editor" and “Formula Card Editor” chapters immediately following this one.

VALIDATE FORMULAS

This dialog scans the formulas stored on the PC, and reports any discrepancies contained in the data files. It is a useful feature in several circumstances. For instance, you might copy some formula files from an older system, and want to test their validity before using them. Also, you might restore an old formula set you previously saved on floppy disk, and wish to test it's integrity.

First, highlight the group you want to check in the "Group" list box, then click on either "Formulas" or "Operations" and click on the "Start" button or hit [Enter].

A progress meter will appear to let you know how much data has been processed. When 100% is reached, the "ERROR" and "WARNING" list boxes will fill with messages describing any discrepancies found.

Any errors should be reported to Softrol, but warnings are inconsequential and mainly provide Softrol with supplemental debugging information.

Click on the "Exit" button to exit, and the appropriate "Print" button to print the desired list.
COMPARE FORMULAS

This dialog compares the formulas stored in PulseNet with those actually in the washers. Every machine in the currently selected group is checked.

Clicking the “Start” button begins the comparison. One at a time, each machine in the group is read, then the formulas compared to those stored on the computer. Any entries in the data grid indicate mismatches, meaning the formula located on that machine does not match the one in PulseNet. The “Change ID”, “Print”, and “Exit” buttons perform their usual functions.
This is a handy dialog, for instance, to make sure no one has changed any formulas on the washers themselves, and neglected to upload the changes into PulseNet. That scenario does occur sometimes, but is rare. An emergency situation could dictate a formula change late at night when normal PulseNet operators may not be present. However, the normal and recommended way to edit formulas is to do it in PulseNet, then use “Send Group Formula Update” to download the changes to all washers in the group.

**SELECT ASSAY**

This selection assigns a chemical assay to the current group. The assignment may be changed or removed. The assay values will be used when downloading formulas to the machinery. Read more about chemical assays in the “Formula Editor” chapter.

**SEND GROUP FORMULA UPDATE**

This selection, also available by hitting the [F4] key or clicking it's toolbutton, will download the formula set for the currently selected group to every washer in that group. This needs to be done after you edit the formulas and wish your changes to be reflected on the machine controllers. Since this will overwrite all formula data on the affected controllers, you will be asked for confirmation before continuing. Be advised that if any formula or operation names have been changed, the entire vocabulary set will also be downloaded.

If one or more washers are off-line, you will be asked to retry or skip that washer, or abort the process entirely. If you skip machines or abort, some washers may contain the updated formulas, while others may not. You should fix the communication problem, and restart the Group Formula Update. This will insure that all machines in the group are using the same formula set.

Remember that you may communicate with the machines at any time, as long as they are turned on and connected into the network. If a machine is currently running a formula, however, any changes you made to that formula will not appear on the washer until the next time it is run.

**CHANGE GROUP ID**

The Change Group ID dialog may also be accessed by it's toolbutton, or by hitting the [F9] key. It also appears in many other dialogs for the convenience of the user. A scrolling list of groups is displayed for the user's selection. Once a group is highlighted in the list box, you may click the "OK" button or hit the [Enter] key. In addition, a selection may be made by double-clicking it with the mouse, no matter where the highlight bar is.
One of the most frequently used dialogs in PulseNet is the formula editor. It enables the user to enter and modify formulas and operations in a friendly environment on the PC. The editor contains a rich set of editing tools, including "cut and paste" capability, find and replace functions, undo operations, manual or automatic backup of data, shortcut keys, and various printing options. In addition, chemical and supply usage for each formula can be displayed, and the classification and yield can also be set.
It is beyond the scope of this manual to explain or tutor the user on the chemistry and physics of wash formulations; however, the function and features of the formula editor will be explained in detail in the following sections of this chapter.

The editor may be entered from the Main Menu either through the menu bar's "Group" submenu, clicking the appropriate toolbutton, or by hitting [F3].

THE MAIN SCREEN

Like the Main Menu of PulseNet, the Main Screen of the editor contains a menu bar along the top that contains the various menus. Under the menu bar is a row of toolbuttons, which perform various frequently-used menu selections, plus an Export button. The Export button presents options for making a PDF file, sending the formula as an e-mail, and exporting the formula into Microsoft Excel. Beneath this is a very large grid that is used to hold the instructions of formulas that are being displayed. At the bottom left of the screen is four information lines. The top line displays the currently selected group number and name, the second tells the formula's classification, the third line displays the yield and count of the formula, and the last line will show free formula memory and the chemical cost per hundred-weight. The yield is the number of pounds (or kilograms) of goods that the formula is designed to process. Likewise, the count is the number of units (individual pieces of laundry) usually processed.

Be advised that free formula memory is just that - formula memory. It refers to the available space on the memory card in the MicroPulse controller. It does not have anything to do with the RAM in the computer on which PulseNet is installed.

In the lower right hand corner of the screen is the formula info box. It contains the number and name of the currently open formula, the user/date/time of the last save, the estimated run time of the formula, and the empirical run time. Estimated time is derived from the formula itself plus the applicable standard times. Empirical time overrides this and is user-definable.

Below the formula is the NotePad. The user may attach notes and comments to each formula and operation. Clicking the Save button beside the NotePad will save it’s contents. When in a formula, notes concerning embedded operations may be viewed by highlighting it’s name.

Above the formula grid is the Assay, Load/Unload Time, and AutoChem Display. The Assay and Load/Unload Time will be explained later in this chapter. The AutoChem section displays the number of chemicals set to automatically inject on the current machine. It can be temporarily changed by clicking on it. This enables an empty group (one without any machines assigned) to display the correct step times and Estimated Run Time of the formula.

THE FILE MENU

The file menu contains selections to manipulate the formulas themselves, such as opening and closing, printing, and backup. Some selections act on a single formula or the entire formula set, depending upon whether or not a formula is currently open. This is explained for each selection.
OPEN FORMULA

The first selection in the File menu (also available on the toolbar or by hitting [F4]) presents the user with a list of formulas for the current group. There are 128 formulas, and the number and name of each is shown. Few customers use all available slots, but they are there if needed.

To open a formula, highlight the desired one in the popup list and click on the "OK" button. You can also just hit [Enter], or double-click the mouse on the desired selection.

As with all list boxes, you can maneuver around by using [Home] to go to the top of the list, [End] for the bottom, [PageUp] or [PageDn] to advance many lines (a page) at a time, or use the mouse on the scroll bar (on the right side edge of the box).

Clicking on the "Cancel" button opens no formula and returns you to the Main Screen.

Once open, there will be a line of text in the grid for every instruction in the formula. The left column displays the line number. Next, a description of the instruction follows, including any values or parameters involved. Then, the last two columns may contain “step information”. This will only appear for certain instructions which add time to the formula. The value in the Step column is the step number, and the value in the Time column is the accumulated formula run time up to that point.

OPEN OPERATION

This selection operates identical to the Open Formula selection, except that a list of operations is presented. It also has a toolbutton, and can be activated with the [F5] key. An operation is a collection of individual instructions, grouped together as a unit to allow easy insertion into a formula. This is handy for sequences of instructions that are used often in more than one formula. Rather than entering each instruction by hand every time, the user may save time by merely inserting the operation. This function is not available for tunnel washer groups.

Note that class, yield, and count do not apply to operations, and therefore are disabled when editing operations.

PREVIOUS

Once a formula or operation is opened, this selection will immediately take you to the previous formula/operation. You may also hit the [F11] key to access this function.

NEXT

Once a formula or operation is opened, this selection will immediately take you to the next formula/operation. You may also hit the [F12] key to access this function.
CLOSE

This selection exits an open formula or operation and returns to the Main Screen. It is also available by hitting the [Esc] key. If changes were made, you will be prompted to save or discard them. Click on the appropriate button.

ADDITIONAL SESSION

Another editing session may be started by choosing this selection. You may have as many editors running at once as your computer’s RAM (memory) allows. You could edit formulas in one editor, while editing operations in another. You can actually cut, copy, and paste between the editors. This feature is most useful when your screen resolution is 800 X 600 or greater, as this allows you to see both editors at the same time without resizing or minimizing one.

An editor started after the first one will display a link symbol in its lower left-hand box. This is to remind you that there are other editors running. You cannot exit the original editor without first exiting all linked editors.

If both editors are editing the same formula or operation, be aware that one editor's changes won't be reflected in the other unless you close the formula and reopen it after saving in the other editor. The formula will always match the one in the last editor that saved.

Additional sessions make it impossible to change groups in all editors. If you need to cut, copy, or paste lines from formulas in different groups, you must do it with a single editor and change groups as needed within that one editor.

Be aware that a linked editor in the Auto Backup mode will overwrite the first editor's backup, since both are editing the same group. To simultaneously edit the same group and keep the original editor's backup, turn off the Auto Backup mode in the second editor before editing.

NAME

When the highlight bar is over the first line of a formula (it's name), this selection allows the user to edit the formula or operation name. You can do the same thing by hitting the [Enter] key (doing so edits any valid line of the formula).

Editing a formula or operation name in the editor is the same as doing it from the Edit Vocabs dialog discussed earlier. Usually bulk name changes, such as setup after installation, are done from Edit Vocabs. Subsequent "one at a time" changes are usually done here in the editor.

Hitting the [Esc] key or backspacing over the name until it is blank will leave the vocab intact, but flag the formula name as "unassigned". This is how all formulas and operations start out on a newly-installed system.
**IMPORT**

Importing means taking data from somewhere else *on the PC* and placing it in your current work area. In the editor, formula or operation data may be copied from another group or machine directory to the current group. If you are in the Main Screen, entire formula/operation sets may be copied. If you currently have a formula or operation open, then just a single formula/operation is imported.

Before copying begins, you will be asked for the source - group or machine. Keep in mind, though, that if a machine is specified as the source, you are not guaranteed that the formulas you receive are actually the ones out on the controller. To insure this, perform an "Upload Formula Data" from the "Machine to PC Communications" menu selection before importing from a machine directory (see the Machine Menu chapter later in this manual).

If you are in the Main Screen, you will also be asked if you wish to import the entire formula or operation set. Importing the formula set automatically imports the operations also, as well as the associated vocabularies and chemical setups. *Importing operations for tunnels has no effect.*

This selection is particularly useful when setting up new groups which have formulas somewhat similar to another one. You can create the new group, make it the currently selected one, and enter the editor. From here, you can import the similar formulas from another group, modify them as needed, and save re-entering them from scratch.

**DELETE**

This selection will delete the entire formula or operation set from the Main Screen, or a single formula/operation if one is currently open. Use this function with caution - when a formula set is gone, the only way to retrieve it is to restore a previous formula backup, or import from a machine. If you have not recently backed up or uploaded formula data from a machine in the group, your data is lost. Single formula/operation deletions, however, can be reversed with the Undo function (discussed later).

**SAVE**

This selection saves the currently open formula or operation, *if it was modified since being opened.* You can do the same thing by clicking the appropriate toolbutton, hitting the [F10] key, or using the [Ctrl-S] key combination. After saving, the user remains in the formula or operation. You must use the "Close" function to exit to the Main Screen, or you may open another formula.

**PRINTER SETUP**

This selection displays the standard Windows printer setup dialog. Refer to your Windows and printer manuals if you need additional help.
QUICK PRINT

This selection, available only when a formula or operation is open, allows the user to print it to the currently selected Windows printer. It can also be selected by clicking the print tool button with the right mouse button, or by pressing the [F6] key. Only the formula/operation itself is printed, with no options or additional data. This is useful for a quick printout to refer to while working on a formula, or as a master to post on the machine or file away. It is also a fast way to get a printout for whatever reason whenever you need just the formula itself.

PRINT

This printing function allows much more versatility than a Quick Print, and is available whether or not a formula/operation is open. It can also be selected by clicking the print tool button.

A list of all formulas or operations may be displayed by clicking on the "Formulas" or "Operations" option button. To select all items in the list, click on the "All/None" check box so that a check-mark appears in the box. This will select all items in the list. To remove them, click the box again. To select individual formulas/operations, click on the desired choice(s).

Once all the formulas/operations you wish to print have been selected, you may select various options from the box to the right of the list. These options are as follows:

- Include Formula/Include Operation - when unchecked, it prevents the formula/operation itself from being printed, while still allowing all the other selected options to be printed.
- Include Notes—causes the notes associated with each formula or operation to be printed.
- Include Run Sheet - for every formula, prints a reference sheet which lists all chemical additions and operator prompts, plus the water level, temperature, formula line, and step
where it occurs. Very handy to post near the washer, as an operator guide to all his interaction during the formula run. This option is not available when printing operations.

- Run Sheet Options - when a Run Sheet is included, this option allows the operator to input various header lines for each formula individually, which will appear on the Run Sheet printout. They are "Machine/Operator", "Description", "Weight", "Lot", "Bundle", and "Count". Ratiometric chemical additions will use the weight value in their calculations for the Run Sheet. If no value was entered, the program uses the yield of the formula. Finally, if the yield is set to zero, then the percentage itself is printed out. This is very useful for washroom operators - several Run Sheets can be printed out at various load weights, and the exact amount of each chemical to be added will be listed for each. The data for these headings will be saved with each formula.

- Include Chem Data - produces a listing of the amount and name of all chemical used. Also prints a listing of the supplies used, their cost, the total cost per run of the formula/operation, and the cost per hundred-weight (CWT) and unit.

- Print List - prints a list of all formula or operation names (depending on which is selected).

Click the "OK" button to begin printing, or the "Cancel" button to abort the process.

**AUTO BACKUP**

This menu selection causes no action other than to activate or deactivate the automatic backup mode. When activated, a check mark will appear to the left of the text in the menu.

Auto Backup will perform the Backup function the first time any formula or operation is modified per editing session. This means that you can enter the editor, bring up a formula, change it, and PulseNet will backup your data the way it was when you first entered the editor. It will not backup again until you exit the editor entirely, re-enter, and change something again. See the Backup function description which follows for an explanation of what is involved.

**BACKUP**

When selected, this function will backup all formula and operation data to a single file. This has a multitude of uses, including protection against power failures and hard disk crashes, storage of known good data while you experiment with changes, and archival of valuable formula data.

Included in the backup are all formulas and operations, the vocabularies (formula/operation names, prompts, and chemical names/units), formula yields and counts, estimated and empirical run times, the Standard Times, and all chemical data (not only the group-specific chemical assignments, but also the supplies common to all groups).

You will asked in which directory you want the backup file placed - the currently selected group's directory is the default response. In most cases, since most of this data is specific to the group, you should accept this default.
However, it is very handy to place the backup file on a floppy disk for archival purposes. This allows the user to have a second copy of the data should anything disastrous happen to the PulseNet computer. In addition, it allows your formula data to be portable. For instance, a company with several plants could take a backup disk to a new plant just starting up, and tremendously speed up the startup time of this new installation.

To place the backup on a floppy disk or USB memory stick, just select the device from the drive list box. You should accept the default file name. Since it contains the group number, it will allow you to place multiple backups, possibly all groups, on the same drive.

**RESTORE**

This function will restore the formula and operation data to the way it was the last time a Backup was performed. Optionally, chemical data and/or supply data can also be restored.

You will be asked in which folder the backup file is located - the current group's folder is the default response. In most cases, you should accept this default. If, however, you are restoring data from a floppy or memory stick, just select the correct drive from the drop-down list box.

The user is then prompted as to whether or not he wants chemical and supply data restored. This is not an issue within the same plant, and you should always answer "Yes" to this prompt.

However, if you are restoring data from another plant (or worse, another company), you need to consider this issue. Restoring chemicals will overwrite all group-specific data such as chemical assignments, and restoring supplies will overwrite the inventory supply chemicals common to all groups. The supplies at the other plant may not be the same as yours. If this is the case, your chemical supply data will be replaced with the ones from the backup file.

**TEMPLATES**
This menu selection will store formulas or operations for later retrieval. Each entry is stored in a database along with the date, time, and a user-input description.

To store a formula or operation, you must first open it. Then enter the Templates dialog, click the "Store" button, and enter a description of the data you are about to save. To restore an entry, you must first open a formula or operation. Then enter the dialog and click the "Restore" button. If “Replace” is chosen, the entire formula or operation will be replaced by the contents of the template. If “Add” is chosen, the data will be inserted above the current line, much like a "paste" operation.

The "Delete" button will purge old or unused entries, and the "Print" button will print the contents of the database (dates, times, and descriptions). The "Exit" button returns to the editor.

EXIT

Selecting this function or hitting the [Esc] key will exit the editor and return you to the Main Menu. There is also an Exit toolbutton for your convenience in the toolbar.

THE EDIT MENU

EDIT

This selection will edit any valid instruction displayed in the list box, and is also available on the right-click popup menu, toolbutton, or by merely hitting the [Enter] key. The highlight bar must be over a valid editable instruction - any line in the editor that includes a user-selectable value or parameter. Operation names (unless you are editing operations) and the end of formula/operation (last line) are examples of non-editable lines. The editing of valid lines will bring up the same lists, choices, etc. as when you insert the instruction from scratch.

CUT

This selection will cut (remove and hold in the Windows clipboard) all currently selected lines in the editor. See on-line help (press [F1]) if you need assistance selecting multiple lines. You may also access this function with it's toolbutton, right-click popup menu, or by using the [Shift-Del] or [Ctrl-X] keystrokes.

Once you have cut a line or a number of lines to the clipboard, they are held there until you do another cut, or perform a copy (see next section). From here, they may be pasted into the current formula, another formula, or even somewhere in another group's formula set.

COPY

Copy works similar to cut, except the selected lines are left in the formula. They are merely copied to the Windows clipboard. This function is also available via the toolbar, right-click popup menu, or by pressing the [Ctrl-Ins] or [Ctrl-C] key combinations.
PASTE

This function will copy the contents of the Windows clipboard to the current formula or operation. The line(s) will be inserted before the currently selected line in the formula. You may also access this function through the toolbar, right-click popup menu, or with [Shift-Ins] or [Ctrl-V].

FIND

Selecting this function will prompt the user for text to search for in the currently open formula or operation. The text of the current line is the default, but any text may be entered. The search is not case sensitive (it doesn't matter if any of the text is capitalized or not - only the letters themselves will be searched for). Searching begins with the line immediately following the current line. When the first matching text is found, the highlight bar is moved to the line containing that text. You may also use [Ctrl-F] to access this function.

FIND NEXT

This selection will move the highlight bar to the next occurrence (if any) of the last text searched for with the Find command. It can also be accessed with the [F3] key.

REPLACE

This handy and powerful function (also available by hitting [Ctrl-R]) will allow the user to edit a line in the formula, then make every other similar line the same. For example, you could edit a Run Time instruction to 5 minutes, and all Run Time's in the formula would equal 5 minutes.

First, the user is asked to edit the current line. Then, he will be asked if the program should change all other instances of that particular instruction ("Replace All"), or ask permission for each one ("Confirm Each"). If confirmation was requested, a "Yes", "No", and "Cancel" choice is presented for each occurrence of that instruction.

The highlight bar will return to the original line unless a confirmed search was canceled, in which case it remains at the canceled line.

INSERT INSTRUCTION

Right-clicking the mouse button or using the toolbutton also accesses this function, or you may use the [Ins] key. Ten buttons are displayed for instruction selection. In most cases, all but the first three pop up menus for additional choices. The "Cancel" button exits without inserting an instruction.

Each instruction is different - some have no values or parameters, while others have one or several. This manual will not attempt to demonstrate each instruction's insertion. Any choices the user needs to make are pretty straightforward and self-explanatory.
INSERT OPERATION

Identical to the Insert Instruction function, except that a list of operations is displayed. It can also be selected by using the right-click popup menu, right-clicking the toolbutton, or using the [Alt-Ins] key combination. *This function is not available for tunnel washer groups.*

INSERT FORMULA

Working similar to the previous selection, this function displays a list of formulas. The user can actually insert another entire formula into the current one. Again, insertion takes place before the currently selected line. The [F7] key may also be used for this purpose, or the right-click popup menu.

DELETE INSTRUCTION

This menu selection deletes the currently selected line(s) from the formula or operation. See on-line help if you need assistance selecting multiple lines in the editor. You cannot delete the first line (the formula name) or the last line (end of formula marker) from a formula or operation. The toolbutton or right-click popup menu can also access this task, or the [Del] key.

DELETE OPERATION

This selection (only available when a formula is open) will delete all lines contained within an operation. *It is disabled for tunnel washers.* The highlight bar need not be on the operation name itself. The program will scan lines in reverse until an operation name or line #2 in the formula is reached. Next, it will scan forward until another operation name or the last line of the formula is reached, then back up one line. These lines will then be removed from the formula. You may also use the toolbutton, right-click popup menu, or [Alt-Del].

UNDO

This very handy menu selection will undo the last edit made to the formula or operation. It may be accessed also with the [F2] key or the [Ctrl-Z] key combination. There are a couple of things that undo *cannot* reverse, such as the Set All Yields command discussed later.
UNDO ALL

This function will return the formula or operation to the way it was when you last opened it. This is handy for starting all over for whatever reason.

THE TUNNEL MENU

STANDARD TEMPLATE

Available only for tunnel washer groups, this selection will insert the standard template into an empty formula. The template contains all applicable Compartment Start instructions, plus examples of all allowable instructions for each compartment.

CUSTOM TEMPLATES

This selection functions identically to the Templates selection in the File menu. The only exception is that the user is not asked to replace or add to the current formula. Only replacement is allowed (this insures there is only one section of the formula for each compartment).

FORMULA DATA

This selection allows the user to set various values and conditions for each tunnel formula. The lowest and highest weight allowed for the formula may be set, along with the press and dryer formula, and a code for the destination. Click on “Print List” to print this data for all formulas.

Certain conditions may also be set if the current formula is followed or preceded by a user-specified formula. On the left (in blue), if a chosen formula follows the current one, empty pockets (followed by an ending formula) may be ran first. Or an alternate formula may be ran instead. Simply select the “following” formula from the top drop-down list box, click on
“Empty Pockets” or “Alternate Formula”, and set these values accordingly. Likewise, on the right (in red), select a formula that preceeds the current one and choose an alternate to run.

**THE UTILITIES MENU**

**YIELD**

This menu selection allows the user to set the yield for the currently open formula. The weight and the units are both set, and displayed in the lower left-hand corner of the screen.

The yield of a formula refers to it's normal (or average) production output. In other words, a yield of 400 pounds means that the formula was designed to wash 400 pounds of laundry. Likewise, a yield of 100 units means the formula normally washes 100 individual pieces.

These figures are used in various reports if no yield was entered at the controller for a particular formula run. If you don't "prompt for weight" at the controller, make sure these values represent an average so that your reports come out as accurate as possible.

**SET ALL YIELDS**

This function works similar to the Yield command, except the yields for all formulas are changed to the common values entered.

**CLASSIFICATION**

This menu selection sets the classification of laundry usually washed by a particular formula. The list of classifications from the Configure Classification dialog discussed earlier is displayed, and the user is allowed to make a selection.

This classification is used in reporting plant production. It can be very informative, for example, to see how much Shop Towels versus Hospital Linen a plant processes over a period of time. If a formula has no class assigned, it is included in the report’s Unassigned category.

**EMPIRICAL TIME**

Empirical Time overrides the Estimated Run Time of a formula. It helps customers who, for whatever reason, find the Estimate to be significantly incorrect. This rare peculiarity can cause inaccurate formula efficiency reporting. The value entered should be the actual time the formula has been observed to run on the average. To revert back to using estimated time in your reports, set Empirical Time to zero.

**LOAD/UNLOAD TIME**

This feature allows the user to set the load and the unload time on a per-formula basis. The reports will use these values instead of the group-wide defaults set up in Edit Standard Times when calculating load/unload efficiencies.
ADJUST CHEMICALS

This selection allows the user to adjust the chemical amounts in either the current formula, or all formulas at once. Enter a percentage of the current chemical amounts, and they will all be adjusted accordingly. This has many uses, such as importing formulas from a group of 200 pound washers into a 400 pound group, and then adjusting the chemical amounts by 200%.

FORMULA INFORMATION

This selection prints out a list of all formulas, complete with all associated data.

FORMULA CHEMISTRY

This selection will display all formulas and all chemicals used in those formulas, in a grid. It is handy for seeing where the different chemicals are used. Since this grid is sometimes larger than letter size paper, it helps to click the “XL” button and bring the data up in an Excel spreadsheet and print from there. Note that this only works if Microsoft® Excel® is installed on the computer. Otherwise, a CSV file will need to be created with the CSV button, and the file carried to a PC that does have Excel® installed.

FORMULA HISTORY

This selection displays information about the last time each formula was saved on the PC. This includes the user, date, and time. The data may be sorted by formula (the default), or by the
user or date/time by clicking the desired option button. Clicking the “Print” button will print the information, and clicking the “Exit” button or hitting the [Esc] key will exit the dialog.

CLASSIFICATION LIST

This selection displays all Classifications, and the formulas assigned to each.

CHEMICAL USAGE

This menu selection displays the chemicals used in the currently open formula. You may choose “Selected” to evaluate only the highlighted line(s), or “Formula Totals” to display all chemicals in the entire formula.

“Selected” is especially useful to see how much chemical a single “Add Chemical by Percent” instruction is going to use. This function may also be accessed with the [F8] key. Press the [Esc] key to return to the Main Screen.
SUPPLY USAGE

The chemical usage is determined via the process described above, then displayed according to the inventoried supply chemicals which make up these "floor" chemicals. This function may also be accessed with the [F9] key. Press [Esc] to return to the Main Screen. Displayed for each chemical is it's cost, and that cost's percentage of the total formula cost.

<table>
<thead>
<tr>
<th>Amount</th>
<th>Unit</th>
<th>Supply</th>
<th>Cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1250</td>
<td>Gal.</td>
<td>Alkali</td>
<td>0.3375</td>
<td>35.5</td>
</tr>
<tr>
<td>0.0312</td>
<td>Gal.</td>
<td>Detergent</td>
<td>0.3119</td>
<td>32.8</td>
</tr>
<tr>
<td>0.0469</td>
<td>Gal.</td>
<td>Sour</td>
<td>0.2531</td>
<td>26.7</td>
</tr>
<tr>
<td>0.0493</td>
<td>Gal.</td>
<td>Bleach</td>
<td>0.0470</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Total Cost: 0.9494
Cost/CWT: 0.1187
Cost/Unit: 0.0000

Shown at the bottom is the total chemical cost per formula. Underneath this is the cost per hundred-weight (CWT) of goods processed, as well as the cost per unit. These last two figures use the current Yield and Count of the formula, as displayed in the editor's Main Screen.

WATER USAGE

This menu selection displays the waters used in the currently open formula. It may be selected in the menu, or toggled by pressing the “W” key on the keyboard. Note that no “Fill to Level” instructions are included in the totals, only “Fill Volume” and “Fill Ratio”. Also, Thermo Water Fills accumulate their totals under the Thermo heading, as the exact amount each individual water valve will use varies from formula to formula. For these reasons, the data is most useful when no “Fill to Level” instructions are in the formula, and you don’t mind that the Thermo Fills are not broken down by individual valve.

CHEMICAL ASSAY SELECTIONS

The next three menu selections present choices for using and managing chemical assays. Assays are reports from your lab indicating the relative strengths of the formulas’ chemicals.
They allow the user to do things such as compensate for weakening bleach strength without editing the formulas using the chemical.

The feature is used by entering assays in the formula editor, then assigning an assay to a group either in the editor itself or out on the Main Menu under the “Group” menu. As formulas are downloaded to the washers, the chemical amounts are adjusted per the assay values. The adjusted formulas may be viewed in the editor, and all printing made to reflect the adjusted amounts. No formula editing is allowed when viewing in the assay mode.

**ENTER/EDIT ASSAY**

This dialog allows the user to create, edit, and delete assays for the current group. The purpose of using assays is to compensate for varying chemical strengths without editing formulas.

To create a new assay, click on the “New” button. You will be asked for a descriptive name for the assay, up to 32 characters long. It will be saved and appear in the “Database” box, with all figures in the “Assay Value” box starting out at 100%. Using your lab’s assay report, enter the strength of all chemicals not at the original 100% in the “Assay” column, and click “Save”. For example, let’s say your dye started out at 100% strength, but a month later was down to 90% of...
it’s original potency. Merely enter “90” in the Assay column.

As another example, suppose you normally use 13.5% strength bleach, and have written your formulas to use bleach of this strength. What happens if, for whatever reason, you suddenly get in a batch of 10% bleach? You can enter “13.5” for bleach’s “Normal” value, and “10” for the Assay value. When the formulas are downloaded to the washers with this assay, the chemical amounts will be automatically adjusted to compensate for the difference. No need to edit all the formulas using the assayed chemicals.

The “Reset All” button will reset all values to 100%, and the “Cancel” button will discard your changes and allow you to choose another assay. Once an assay has been modified, you cannot change to another assay without saving or canceling.

To delete an old unused assay, highlight it in the Database box and click “Delete”. Clicking “Exit” will return you to the formula editor.

**SELECT ASSAY**

This selection will assign an existing assay to the current group. If none is desired, choose the first selection, “Normal”. If an assay is assigned, it will be used and chemical amounts adjusted as the formulas are downloaded to the washers. You may also access this function by clicking on the Assay Display on the Main Menu of PulseNet.

**DISPLAY ASSAY**

Clicking this menu selection will cause the editor to go into the “Assay Display Mode”. In this mode, all chemical amounts are adjusted according to the assigned assay. You may view and print the formula in this mode, but editing is not allowed. Any advanced printing functions, such as Run Sheet and Chem Data, will reflect the adjusted chemical amounts. To exit this mode, click on the “Exit” toolbutton.

**LANGUAGE & METRIC SYSTEM**

These selections temporarily toggle their respective settings while in each editing session.

**CHANGE GROUP ID**

This will exit the current group and allow editing the formula set of another group. A scrolling list of groups is displayed for the user’s selection.

**THE MISC MENU**

All selections under this menu (except one) are duplicated from the Main Menu, and placed here for your convenience. Please refer to the appropriate sections of this manual for help on these selections.
UPDATE OPERATIONS

This Misc menu selection is the only one not duplicated elsewhere, and performs a very specialized function. It is mainly used by customers who build their formulas entirely with operations only, and wish any changes to their operations to be reflected in every formula they are used in.

First, the user is asked which operations to update. By default, all operations are checked for updating. As the data is processed, all formulas are scanned, and all chosen operations are replaced with their current versions. This is great for keeping a standard set of operations, and automatically having all formulas contain these standards. However, this function may not behave as the user expects, and the following caveat must be noted:

When a chosen operation is found in a formula, every instruction from that operation’s name to either the next operation name or the end of the formula are replaced with the current stored operation. This means that *all edits to the operation’s instructions, any deleted instructions, and any instructions added into or after the operation are permanently lost!* If all operations are to be updated, after the first operation is found, the rest of the formula will consist entirely of operations only.

There are two special circumstances to remember:
- Any stand-alone instructions at the top of the formula, before any operations are encountered, will remain intact.
- Any operations not chosen for updating will remain untouched, retaining any editing, and deleted or inserted instructions up to the next operation name or end of formula.

This last circumstance provides a way for users to maintain a global standard operation set, yet still retain added instructions. It can be named something like “INSTRUCTIONS” or “ADDED LINES”. Whenever the user needs to add instructions after an operation, he inserts this special operation and adds the instructions there. Then, when an Update Operations is performed, he simply deselects this special operation for updating.

Having said all this, you may still use this function and not get the results you expected. If this happens, you can immediately recover all data as it was before the update by restoring a special formula backup file. Every time Update Operations runs, it creates a backup file in the group folder, named “B4UpdOps.bak”. Use the Restore selection in the File menu if you need to recover the old data.

SEND GROUP FORMULA UPDATE

This selection provides a handy way to update the machines with the formula changes without exiting the editor.
THE HELP MENU

SHORTCUT KEYS

This selection displays a list of all shortcut keys used in the editor. Valuable editing time may be saved through their frequent use. Several important features of the editor, such as cut and paste operations, have been assigned two shortcut keys - one for those familiar with the MS-DOS text editor, and one for those more accustomed to the standard Windows keys.

<table>
<thead>
<tr>
<th>Shortcut Keys</th>
<th>Shortcut Keys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Edt</td>
<td>F1 Help</td>
</tr>
<tr>
<td>Sft-DEL</td>
<td>F2 Undo (Ctrl+Z)</td>
</tr>
<tr>
<td>Ctl-INS</td>
<td>F3 Find Next</td>
</tr>
<tr>
<td>Sft-INS Paste (Ctrl+V)</td>
<td>F4 Open Formula</td>
</tr>
<tr>
<td>FInd (Ctrl+F)</td>
<td>F5 Open Operation</td>
</tr>
<tr>
<td>Replace (Ctrl+R)</td>
<td>F6 Quick Print</td>
</tr>
<tr>
<td>INS Insert Instruction</td>
<td>F7 Insert Formula</td>
</tr>
<tr>
<td>Alt-INS Insert Operation</td>
<td>F8 Chemical Usage</td>
</tr>
<tr>
<td>DEL Delete Instruction</td>
<td>F9 Supply Usage</td>
</tr>
<tr>
<td>Alt-DEL Delete Operation</td>
<td>F10 Save (Ctrl+S)</td>
</tr>
<tr>
<td></td>
<td>F11 Previous</td>
</tr>
<tr>
<td></td>
<td>F12 Next</td>
</tr>
</tbody>
</table>

THE PROGRAMMABLE TOOLBUTTONS

The last eight toolbuttons in the toolbar are user-definable, and warrant special attention. When clicked, the instruction or operation assigned to the button is inserted at the current position in the editor. No need to bring up a list, scroll through it, and make a selection.

To assign a toolbutton, click on it with the right mouse button. You will be asked whether you wish to assign an instruction or operation (assigning operations for tunnel washers is meaningless). Then you will be presented with the appropriate list to choose from. Next, you are asked for the text to display on the button.

For example, you could assign the Run Time instruction to the first button, and change it's text from "II" to "RUN"

These buttons are specific to each user. If security is enabled (a name and password are required to enter PulseNet), each user may have his own set of custom toolbuttons defined.
OVERVIEW

The machine menu performs functions at the machine level. All dialogs only include data from the currently selected machine. These dialogs enable the user to edit the machine setups, upload and download data to the controller, graphically monitor the machine status, and setup the maintenance schedule, among other things.

MACHINE CONFIGURATION

This menu selection allows the user to change the machine configuration, or setups, from within PulseNet.

<table>
<thead>
<tr>
<th>Setup</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric System</td>
<td>Disabled</td>
</tr>
<tr>
<td>Manual Buttons</td>
<td>Enabled</td>
</tr>
<tr>
<td>Chem Inject System</td>
<td>Chem 1-8</td>
</tr>
<tr>
<td>Auto Chem Flush</td>
<td>08 Seconds</td>
</tr>
<tr>
<td>Flow Sensors</td>
<td>Disabled</td>
</tr>
<tr>
<td>One Way Chems</td>
<td>Forward</td>
</tr>
<tr>
<td>Drain Delay</td>
<td>08 Seconds</td>
</tr>
<tr>
<td>Extract Retry</td>
<td>18.0&quot;</td>
</tr>
<tr>
<td>Unload Method</td>
<td>Normal</td>
</tr>
<tr>
<td>3rd H2O Valve</td>
<td>Enabled</td>
</tr>
<tr>
<td>3rd H2O Default</td>
<td>HC-</td>
</tr>
<tr>
<td>4th H2O Valve</td>
<td>Disabled</td>
</tr>
<tr>
<td>4th H2O Default</td>
<td>...</td>
</tr>
<tr>
<td>2nd Drain</td>
<td>Enabled</td>
</tr>
<tr>
<td>3rd Drain</td>
<td>Disabled</td>
</tr>
<tr>
<td>Chem WatchDog</td>
<td>04:00</td>
</tr>
<tr>
<td>Drain/Fill WatchDog</td>
<td>04:00</td>
</tr>
<tr>
<td>Steam WatchDog</td>
<td>10:00</td>
</tr>
<tr>
<td>Cool WatchDog</td>
<td>08:00</td>
</tr>
<tr>
<td>Level Halt High</td>
<td>35.0&quot;</td>
</tr>
</tbody>
</table>
It is important to remember that the values initially displayed in the list box are those stored on the computer. The setups may have been changed at the controller since the last download, so you should upload the information before making any changes. This insures that the data you are looking at is current.

**CAUTION**

*When working with a new or converted machine, always do the initial setup at the controller. The exception to this rule would be if you have an identical machine you can upload or import from, then download (see below). Failure to do so may lock up your machine.*

Clicking the "Upload" button will present you with a list of machines to choose from. You will usually pick the currently selected machine, but if you are setting up PulseNet for the first time, you may wish to upload data from a previously configured machine, edit it as needed, then download it to the current one. This will save you some time when you first set up your plant.

As is true throughout PulseNet, importing means taking data from somewhere else on the computer and placing it in your current work area. Thus, the "Import" button works similar to uploading, except data is retrieved from another machine folder on the PC, not from the controller itself. This allows you to copy the setups from a previously configured machine.

Once you are sure you have the correct data you want to edit, you may select any entry and click the "Edit" button or hit [Enter] to change it's value.

The "Save" and "Download" buttons perform different functions. Saving, while necessary, only stores the information on the PC - you must then click “Download” to get this data to the machine controller itself.

The "Change ID" button allows the user to edit setups from another machine. The currently selected machine is indicated in the upper right-hand side of the dialog. The "Print" button will print the setups to the printer. Lastly, the "Exit" button will return the user to the Main Menu.

**CHECK MACHINE COMMUNICATIONS**

This selection allows the user to test communications with all machines. Simply click the “Start” button, and each machine’s status will be displayed. The “Exit” button returns to the Main Menu.

**MACHINE TO PC COMMUNICATIONS**

This menu selection displays a submenu of choices, all of which bring data up from the controller and place it on the computer. It is placed in the corresponding machine folder. For instance, the data transferred for machine #1 will be placed in a folder called "M1" directly under the PWPM site folder (C:\PWPM\HOME.SIT\M1, for example).

**Upload Formula Data** will transfer all formulas and operations from the machine, and store
them on the PC. This function’s major uses are to bring existing machine formulas to a new PulseNet installation, and to regain the formulas in PulseNet should they ever be lost. Note that the associated vocabularies (needed for formula and chemical names, chemical units, and operator prompts) will also be uploaded. Be warned, however, that uploading formulas will overwrite all formula data in your formula editor.

**Upload History** will transfer all formula, password, and watchdog histories to the computer. This is a record of the last 100 formulas run, 200 passwords entered on the controller, and the last 200 watchdogs tripped. You can upload from the current machine, the entire group, or all machines. The reports will be discussed later. The [F6] key also accesses this selection.

Uploading histories also places the data in an SQL-compatible database. This database is also compatible with Microsoft Access®, a component of Microsoft Office. If histories are uploaded frequently (meaning some of the previous entries are still in the list), entries already stored in the database will not be duplicated. Automatically uploading histories at every R/S/R ensures that the corresponding histories are restored whenever a “Summarize Period” is performed.

**Upload Totals** brings accumulated formula run and chemical usage data to the PC. This includes number of runs, all waters used, total poundage, accumulated times for various machine functions, and chemical usage. You can upload from the currently selected machine, or every machine in the group. This data is used in many reports, and will be discussed later.

**Upload Calibration Data** stores the settings for calibrating chemical injection amounts and water on the computer. You can upload from the current machine, or every machine in the group. This data may be viewed in the “Calibrations” dialog discussed later in this chapter.

**Upload Chemical Totals** is like Upload Totals, but only transfers the chemical data. Reporting for chemical totals will be discussed later.

**PC TO MACHINE COMMUNICATIONS**

This menu selection is the reverse of the previous one. It displays a submenu of choices, all of which transfer data from the computer down to the controller. The data is taken from the corresponding machine folder (or group folder if that option is chosen for formula data). For instance, the data transferred to machine #3 is retrieved from a folder called "M3" directly under the PWPM site folder (C:\PWPM\HOME.SIT\M3, for example).

**Download Formula Data** will transfer formulas and operations from the computer to the controller on a single machine. The associated vocabularies will also be downloaded. This function is useful for taking a machine out of production to test formula changes before downloading them to the entire group.

**Download Calibration Data** will send the calibration data stored on the PC to the controller. *If you have not previously uploaded this data, do not download it to the machine!*

**Repair History Pointer** will fix an “Invalid Pointer” error, which may be received when
uploading or viewing histories.

**Clear Machine** will clear the controller of totals (chemical and formula) and/or histories (password, watchdog, and formula). The “Totals” part is actually the Reset portion of a Read/Save/Reset. This menu selection is most useful when adding a new or converted machine to the PulseNet system - it zeroes out all data in the affected sections of controller memory.

**Sleep Machine** will "sleep" the machine, which in effect freezes the clock on the controller. It is useful for pausing a machine so that no time is accumulated while the machine is down.

**Wake Machine** will cause the controller clock to resume accumulating time.

**GRAPHIC PANEL**

The first selection in the "Display Machine Status" submenu will bring up a graphic display of the actual machine controller. You may also hit the [F2] key to access this function. The particular graphic displayed is dependent upon which Controller Type is assigned to the currently selected group in the "Configure Groups" dialog.
The graphic is a complete representation of the machine controller, including all LED readouts, the LCD display, keypad, and any pushbuttons. Please note that some controllers do not have the pushbutton option, although they are shown in some graphics.

To view a different machine, select “Change Machine ID” from the display’s “Main” menu.

You may use the mouse to push keys on the keypad, just as if you were standing in front of the actual controller. To push a key, merely click on it with the left mouse button. To hold down one or more keys, click on them with the right mouse button. They will stay held down until a button is clicked on normally with the left button. For example, to press the "Yes", "No", and "Enter" keys simultaneously, click on the "Yes" and "No" keys with the right mouse button, then click on the "Enter" key with the left button. Note that use of the keypad is a user-specific privilege if security is enabled.

At the bottom, the text for a pushbutton will turn red if the button is lit on the controller; otherwise, it will be white. For safety concerns, you cannot push these buttons from PulseNet.

If the machine you are watching sounds it's alarm out on the washroom floor, the computer will beep and a "Signal" icon will appear at the top of the screen. To prevent your PC from beeping, select the "Quiet" menu selection so that a check-mark appears beside it in the menu.

You may click on the "Exit" button, or hit the [Esc] key, to return to the Main Menu.

**MONITOR**

This selection is similar to Graphic Panel, except only the LCD and keypad are shown. It provides quick viewing when less information is needed.

**MULTIPLE DISPLAY & MULTIPLE LCD**

This selection, the second in the "Display Machine Status" submenu, allows the user to view from one to all of the machines at one time. The user is asked to select which machines he wishes to monitor. To select all the machines quickly, click on the "All/None" check box at the bottom of the selection window. If a “machine grid” has already been defined, the user need not select any machines, just click on the “OK” button, and the display will come up with the machines arranged in the desired pattern.

To make a machine grid, click on the “Make Grid” button once the Multiple Display appears. Up to 48 machines may be displayed, arranged in any order the user desires. There can even be blank panels, or entire blank rows, so machines can be segregated as desired for readability. Once setup, the “Use Grid” button will display the machines as defined by the grid.

Up to 18 machines may be viewed with Multiple Display, or 21 with Multiple LCD. The LCD selection does not show the LED’s, and requires 800 X 600 screen resolution or better to run. If there are more than the maximum number of machines selected in either mode, the scroll bar may be used to pan the display. Click on the arrows to move up or down one row, or click
ahead of the slider for several rows at a time. To temporarily view the Graphic Panel display for a machine, click on the blue machine number.

If any machine sounds it's alarm, the computer will beep and the machine number text will turn from blue to yellow. To prevent your PC from beeping, click on the "Quiet" check box.

You may click on the "Exit" button, or hit the [Esc] key, to return to the Main Menu.

DIAGNOSTIC

This selection is identical to the "Monitor" discussed earlier, except that a diagnostic box is added at the bottom of the display. It accumulates and displays communication errors, rather than pausing and asking the user to retry, skip, or abort for each one.

This is useful for diagnosing communication errors when adding a new machine to the system, or if an existing machine develops problems.

CALIBRATIONS

This dialog allows the user to view and compare the chemical and water calibrations stored both in PulseNet and on the machine controller. It also allows downloading of the stored calibrations in PulseNet to the controller.

PulseNet’s stored calibrations are displayed in the “Computer” section. Clicking the “Read” button displays those held on the controller - actual calibrations in the “Machine 8K” section, and the dormant copy residing on the 128K Memory Card. Please note that reading
The “Compare” buttons will compare the selected sets of calibrations, and highlight any discrepancies. The “Reset” button will return the display to normal.

To replace the machine’s calibrations with PulseNet’s, click on the “Download” button. This transfers the “Computer” calibrations to both the 8K and 128K memory cards on the controller, then reads back to verify all went well.

The “Copy Calibs to Slot 5” and “Copy Slot 5 to Calibs” provide these controller functions via the computer. Using them is the same as doing the functions at the machine.

The “Print” button should be used after calibration to document the good settings.

**calibrations in this dialog does not store them in PulseNet.** It merely displays them.
MAINTENANCE SCHEDULE

This menu selection displays thirty-two maintenance messages, along with their intervals and remaining times, and the date/time they were last performed and by who. The messages can be edited by the user in the "Edit Vocab Files" dialog.

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Interval</th>
<th>Due In</th>
<th>Performed Last</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ck Lvl Dwn Swit</td>
<td>05:14-2000 15:03</td>
<td>05:14-2000 15:03 Joe Mechanic</td>
<td></td>
</tr>
<tr>
<td>Ck V Seals</td>
<td>05:10-2004 14:40</td>
<td>05:10-2004 14:40 DDT</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Box Filter</td>
<td>05:24-2000 15:05</td>
<td>05:24-2000 15:05 Joe Mechanic</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearing Bolts</td>
<td>05:27-2000 15:06</td>
<td>05:27-2000 15:06 All Thumbs</td>
<td></td>
</tr>
<tr>
<td>Anchor&amp;Bag Bolts</td>
<td>06:01-2000 15:07</td>
<td>06:01-2000 15:07 Chris CrossThread</td>
<td></td>
</tr>
<tr>
<td>Dog&amp;Tubing</td>
<td>06:05-2000 08:00</td>
<td>06:05-2000 08:00 Joe Mechanic</td>
<td></td>
</tr>
</tbody>
</table>

When you first enter the dialog, the intervals and remaining times are blank. You must click the “Read” button to upload the current status of the machine’s scheduled maintenance. For each message, the interval may be set by clicking the "Interval" button and entering the desired time period. Note that when an interval is changed, the "Due In" (remaining time) value resets to the interval length.

After any edits are made, the schedule must be sent back to the machine by clicking the “Write” button, or they will not take effect.

When the remaining time specified by the "Due In" value is reached, the controller displays the corresponding message on it’s LCD display. Qualified maintenance personnel can then clear the display and perform the necessary preventative maintenance procedure when possible.

After the maintenance is performed, it may be recorded in a database by clicking the “Enter Finished Job” button. The particular maintenance, date, time, employee name, and any comments are then entered into the system. The machine on which the job was performed is inserted into the database automatically. It is displayed at the top of the dialog in red.
The machine being scheduled or recorded as having a job performed on it may be changed by clicking on the "Change Machine ID" button.

The “View Maintenance” button displays a single machine or all machine’s maintenance history. In other words, all jobs entered in by the “Enter Finished Job” button. This data may be printed to document a machine’s maintenance history. Additional maintenances, not connected with the machine’s maintenance alarms, may also be entered, making this a complete database of all maintenance performed on a machine.

To purge the job database of old and/or unused entries, click on the “Purge Database” button and select either “Date” or “Machine”. Date will ask for a starting and an ending date to delete from the database, and Machine will delete only those entries for a particular machine.

The CSV button will output the job database to a CSV file.

Clicking on the "Exit" button or hitting [Esc] will exit to the Main Menu.

**CLEAR PPDR WEIGHT**

This is a special function, and will only be used on a blue moon, if ever. What the dialog does is display the Weight field in the PPDR (PulseNet Plus Data Record), which is held in the washer’s memory. It displays all washers at once, and optionally allows the user to reset these weights to zero.

The reason these weights may need to be reset is that they will be assigned to all formulas ran in the Formula History section of controller memory. Normally, weights are only stored there if prompted for on the controller, or supplied by an automated system, such as a bag delivery system. On a non-automated washer that doesn’t prompt for formula weights, the PPDR Weight field should always be zero. However, outside forces (lightning storm, power surge, brown-out, machine maintenance to the circuit boards, etc) may cause a number to appear there.

The symptom caused by a weight stuck in the PPDR is a Formula History report where all the weights for a washer’s formulas are multiples of the same number (usually a number not even close to what the actual weight should be). For instance, if washer #3 reports one run of formula #6 with a weight of 233, three runs of another formula with a weight of 699, and nine runs of yet another formula with a weight of 2097, it’s a good bet the PPDR for that washer has a weight field of 233.

To use the reset feature, first click the “Upload” button to view all the washers’ weight fields. If any are non zero, click the “Reset All” button to zero out these weights. Again, **only clear these weights if the washer is not automated**. If it is, these weights are legitimate and necessary.

**MONITOR FORMULA HISTORIES**

This selection will display all machines, and display the current Formula History information being stored on the controller.
MACHINE GRAPH

This menu selection is unique, in that it is constantly polling the machines, producing real-time data. The user can instantly see the current state of any machine, and whether it is operating within predefined standards, or is inefficiently creating “Excess Times”.
The grid at the top of the dialog’s window shows each machine, along with data gathered from the “historical” area of its memory. This allows the user to know the exact time spent on each phase of machine operation.

Underneath the “Machine Totals” section of the grid, the total poundage processed by the machines, plus their Excess Run Times and the Excess TurnAround Times are totaled up for the entire plant. Underneath that is the Total Excess Time, which combines excess Run and TurnAround times.

Note that a formula’s weight is not added to the machine’s total weight until the formula is complete and enters the Waiting To Unload phase. This insures the goods were properly processed, and prevents invalid weights from being added to the total. An example of an invalid weight would be where a formula was started, then immediately cancelled because the operator realized he entered the wrong formula number. The goods never got processed, so the weight is not added.

The Gantt chart at the bottom graphically displays each of these phases, along with any excess time spent performing them. Excess time is defined as the amount of time a process takes to complete, over and above the set standard. Load and Unload Time standards are set in the Edit Standard Times dialog discussed previously, and Formula Run standards are derived from the formulas themselves. Besides these global group standards, all three times can be set individually in the formula editor itself.

Scanning through the data, and zooming in and out of the timeline are also available. To scroll through the events, just click and drag the mouse anywhere in the tan-colored area at the top. To zoom in and out, hold down the Ctrl key on the keyboard and click and drag the mouse on the Scale Bar. This will decrease or increase the timeline divisions, making the bars longer or shorter, showing more or less elapsed time.

For example, let’s say a formula’s standard Load Time is ten minutes, but it actually took twenty minutes to load. The Gantt chart would display a dark red Loading bar that is ten minutes in length, followed by a bright red Excess bar, also ten minutes in length. By looking at the chart, the user can instantly see which machines are operating in excess time, and take steps to correct the problem.

The Start button will begin the polling of the machines, and the updating of the grid and Gantt...
chart. The Stop button will cease these functions and return the dialog to an idle state.

Colors for all machine states can be changed by double-clicking on the desired state in the “Color Legend” box. Also, the bars in the Gantt chart can appear 3-D or Flat, and this option is available in the “Bar Style” box. Note that these settings should be made before starting the machine polling.

The Maximize button in the upper right-hand corner of the dialog has a special function. When clicked, the dialog is maximized to fill the screen, as one would expect. But, in addition to this, the Gantt part of the dialog is also enlarged to fill the entire dialog’s window. In other words, maximizing the window will fill the screen with the Gantt chart. This is particularly handy if displaying the dialog on a “big screen” located in the wash aisle. Washroom personnel can glance up at the monitor and instantly see if any machines are currently producing any Excess Times, and correct the problem. For viewing the dialog in this manner, the “Flat” bar style should be chosen, as the 3-D style tends to darken the bars too much as the color gradient nears the bottom of the bar.

There are a few caveats to keep in mind when using the Machine Graph. For instance, a common practice is to turn off the machines at night, then power them back up in the morning. In this case, the first “Waiting To Load” and “Waiting To Unload” bars drawn by the graph may not begin at the actual date/time they started. That’s because the program, and even the machine itself, has no idea how long it was turned off. It only knows how much time was accumulated for each phase. This may sound like a bad thing, but it actually presents a more accurate description of the time used in loading and unloading the machine. You don’t want to be charged for time when the machine was powered off. So, the data the Machine Graph displays does indeed accurately represent the actual time used...it’s just that the first bars may not begin at the exact date/time point the loading or unloading began.

Also, there is the case (though rare) of a machine being “put to sleep” by having its timer frozen while the graph is running. In such a case, when the machine “wakes up”, the graph will pick up where it left off, but the bar it was drawing will only lengthen by the amount of time the machine says it accumulated. Again, the program or machine doesn’t know how long it was “frozen”. The result will be a bar that, while representing actual and accurate time, will no longer extend to the current time of day.

CHANGE MACHINE ID

The Change Machine ID dialog may also be accessed by it's toolbutton, or by hitting the [F10] key. It also appears in many other dialogs for the convenience of the user. A scrolling list of machines is displayed for the user's selection. Once a machine is highlighted in the list box, you may click the "OK" button or hit the [Enter] key. In addition, a selection may be made by double-clicking it with the mouse, no matter where the highlight bar is.
OVERVIEW

The database menu provides PulseNet with a rich set of data-gathering routines. Functions are available for transferring information from the machine controllers, storing it in a database, and managing this database. In addition, utility and chemical inventory data may be entered in separate databases, and used later to compare to actual usage.

READ/SAVE/RESET MACHINE DATA

This menu selection is the primary data-gathering function of PulseNet. It will read the formula and chemical totals for all machines in all groups, save this data to the database, and reset the controller totals to zero. The date and time of the R/S/R is saved, as well as any filter data. You may also use the toolbar or the [F5] key to access this selection.

If "Use Filter" is checked in the "System Defaults" dialog, four filter items are requested: Shift, Operator, Supervisor, and User. These data fields may be used as the customer sees fit. Typically, a "1", "2", or "3" is entered for the Shift. Operator is used for the employee who ran the machines, his Supervisor is entered, and the User who is currently using PulseNet is also added. These fields can accept a maximum of 3 characters each (usually initials). Any field you don't want to use should be left blank. Please see "Summarize Period" (discussed in the next section) to attain a fuller understanding of filter use before deciding how to utilize this feature.

Read/Save/Reset's may be done as often as desired, although by shift, daily, or weekly are the more common choices.

Immediately after an R/S/R, all reports that display a period (such as "10-12-94 11:34 to 10-14-95 15:00") will now use the data gathered from this procedure, and display the new period. This period will be the date/time of the previous R/S/R to the date/time of this R/S/R.

It is highly advisable to have all machines powered on during a Read/Save/Reset. If not, the down machines' data will be skipped, and your reports will be incomplete. Those machines' data will not be lost, however, as they will be read at the next R/S/R (provided they are on).
SUMMARIZE PERIOD

This menu selection complements the Read/Save/Reset function described earlier. It presents the user with a list of all R/S/R's by date and time. The current reporting period is listed at the top in blue. The function may also be accessed with its toolbutton, or by hitting the [F7] key.

![Select Starting/Ending Dates for Report]

The purpose of this dialog is to combine the data gathered in more than one R/S/R, and use it in the various reports. A starting and an ending date/time must be chosen, and the ending date/time must be greater than the starting date/time.

It is important to realize that the starting date's data is *not* used - it is merely the point at which data accumulation begins. Think of it as the zero point, where all totals are empty. Every date past the starting date contributes it's data to the final total. In the example above, all machine activity that occurred *after* 10-16-95 at 3:40PM *up to and including* 10-20-95 at 10:59AM will be accumulated and placed in the reports.

When you highlight different dates in the two list boxes, the starting and ending date/times in the upper right-hand corner of the dialog will change to reflect your selections. When the desired date/time's are selected, click the "OK" button. If you change your mind and don't want to summarize a period, click the "Cancel" button or hit the [Esc] key.

If "Use Filter" is checked in the "System Defaults" dialog, four filter items are requested: Shift, Operator, Supervisor, and User. These data fields will be matched up with the ones stored in the database. Any record that does not match all of the filter items will not be included in the final totals. Except for Shift, these fields can accept a maximum of 3 characters each. Any field
you don't want to use in the search should be left blank. Blank fields will match any record from the database.

The filter is useful for such things as producing reports based solely on the second shift's production. To do this, enter "2" in the "Shift" field, and leave all other fields blank. Only records pertaining to the second shift will be pulled from the database.

For the user's information, the size of the R/S/R database is listed at the bottom of the screen, along with the number of entries (R/S/R date/time's) and records (individual machines). If the database grows larger than desired, you can delete old records at any time by using the "Purge Database" selection or store them with "Archive" discussed later in this chapter.

TRANSLATE DATABASE

This selection will take data from the R/S/R database, re-arrange it, and place it in two ASCII Database (ADB) files. The ADB is the programmer's interface into the PulseNet system. Companies can have their resident programmer (or an outside consultant) write programs to access this data and present it in any way the company sees fit. In other words, it allows customers to format their own reports, displaying just the data they want to see, exactly the way they want to see it. In addition, many spreadsheet and database programs will open or import this data directly, such as Microsoft Excel®.

Translate Database always translates the current totals data. If reporting periods other than the current one are desired for the translation, the user must first use Summarize Period and select the desired starting and ending date/time's. Once the desired reporting period has been set, the translation may begin. The user is asked for a file name for the ADB. The default path and file name is the one specified in the "System Defaults" dialog, but any location and file name may be chosen. The formula totals will be named as specified by the user. The chemical totals file name will have "-chems" appended to the name. In other words, specifying a name of "MyTotals.csv" will make two files: "MyTotals.csv" and "MyTotals-chems.csv".

Please be aware that the ADB is larger than Softrol's R/S/R database. Be sure you have sufficient room on your hard drive for the file before proceeding.

The ADB file is a “CSV”, or “Comma Separated Value” file. The layout of the ADB file is explained fully for the user or programmer in the Appendix.

PURGE DATABASE

This menu selection allows the user to delete old records that are no longer used from the Read/Save/Reset database, thereby regaining valuable hard disk space. Typically, users purge their databases annually, keeping no more than a year's worth of data on the computer.

The starting/ending date dialog discussed previously in this chapter is presented, but with one major exception - for purging, the starting date's data is included in the process that follows. Without this feature, you could never delete the first date/time entry in the list.
Once the first and last date/time you wish to purge have been selected, click the "OK" button. The "Cancel" button may be used to abort the process and return to the Main Menu.

**ARCHIVE**

The Archive function allows the user to manage the Read/Save/Reset database for historical and speed considerations. To regain optimum speed, plus save valuable hard disk space, it is wise to archive your database on a quarterly, or at least annual, basis.

The current database’s first and last entries are listed at the top of the dialog in blue. Below that is a list box containing any available archives in the chosen folder. There is a maximum of one thousand archives allowed in any one folder. To choose another folder, you may use the drive and folder list boxes, and the “Create Folder” and “Delete Folder” buttons.

The “Store” button allows the user to choose a starting and an ending date, and store these records in an archive. This archive will be placed in the folder currently chosen by the drive and folder list boxes. After storage, the user is asked permission to remove the archived dates from the database. In most cases, this is desirable, and is the whole idea behind archiving. This deletes the stored entries from the current database.

Although allowed, it is not a good idea to “cut” records out of the middle of the database. In most cases, users will pick the first entry in the database as the starting date, and an ending date
close to the current date. This archives old data (the “top” of the database) for later retrieval, and allows merging this old data back into the database later.

The “Retrieve” button will replace the existing database with data from the highlighted archive.

Storing or retrieving an archive will cause the current existing R/S/R database to be backed up. This allows the user to return to the original database after restoring an archive.

**WARNING!**

*Storing or retrieving another archive without first restoring the backup will cause the original R/S/R database to be permanently lost. If you need to restore multiple archives before returning to the original database, be sure to use the “Retrieve Backup” button between archive retrievals.*

The “Merge” button will add the data from the highlighted archive to the existing R/S/R database, *provided the dates do not overlap.*

The “Delete” button will delete the highlighted archive from the current folder, and the “Print” button will print the list of available archives. The “Exit” button quits the dialog.

**SCAN PERIOD**

This dialog is meant mainly for diagnostics. Rarely, due to unforeseen circumstances, an entry in the Read/Save/Reset database will have pulled unusually high numbers from a machine controller. This will cause many reports to display all nine’s (such as “999999”).

This dialog will help the user to locate, and optionally change, these high numbers. The user is first asked to select a period to examine. All records in that period are then displayed in the top list box for reference.

When clicking the “Scan” button, all records are scanned for numbers higher than the value contained in the “Max Value” text box. You may adjust this value to suit your needs.

If any violations are found, the results are displayed in the lower list box. To reset these records to all zeroes, select a record and click the “Reset” button. **Be aware that all numbers will be reset to zero, not just the violations.**

Instead of resetting, you may repair the database by clicking on the “Repair” button. This will zero out all numbers, then allow you to put formula runs back into the database. For each formula added, the program will automatically add the default run times, load and unload times, weight processed, and chemicals used.

Once the database has been reset or repaired, you must exit Scan Period and use Summarize Period for the changes to affect the reports.
FILL MASTER TABLES

This selection fills the Master Tables that feed data and information about the Wet Process program to other applications. It should be used whenever groups and/or machines are rearranged in the Configure Groups dialog, and also after formula editing.

DATABASE MANAGER

This is a diagnostic tool, and should only be used by Softrol personnel, or under their direction.

EXPORT SQL TO JET

PulseNet normally uses a “Jet”, or Microsoft Access, database. However, especially when combined with other Softrol products, it may instead use a Microsoft SQL Server database. This menu selection will transfer all the data from the SQL Server to the Jet database, allowing those without SQL Server installed on their computer to still work with the program. This scenario comes up most frequently when restoring a site backup.
THE PLANT SUPPLY INVENTORY DATA SUBMENU

This selection contains four functions in a submenu which allow the user to track his supply inventory and usage, and compare it with actual chemical data gathered from the machines.

ENTER/EDIT SUPPLIES

This selection enables the user to enter and edit the chemical supply purchases and usages. Think of it as a database for your physical inventory. All 100 chemical supplies are listed by name and purchasing unit, followed by Previous, Received, and Ending amounts.

<table>
<thead>
<tr>
<th>No.</th>
<th>Chemical Name</th>
<th>Unit</th>
<th>Previous</th>
<th>Received</th>
<th>Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alkali</td>
<td>Gal.</td>
<td>196.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>Conditioner</td>
<td>Gal.</td>
<td>135.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>Detergent</td>
<td>Gal.</td>
<td>317.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>4</td>
<td>Starch</td>
<td>Lb.</td>
<td>164.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>5</td>
<td>Midewcide</td>
<td>Gal.</td>
<td>105.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>6</td>
<td>Sour</td>
<td>Gal.</td>
<td>223.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>7</td>
<td>AntiChlor</td>
<td>Gal.</td>
<td>169.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>8</td>
<td>Softener</td>
<td>Gal.</td>
<td>181.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>9</td>
<td>Bleach</td>
<td>Gal.</td>
<td>50.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>10</td>
<td>Sodium Bifluoride</td>
<td>LB</td>
<td>50.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>11</td>
<td>Supply #11</td>
<td>?Unit?</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>12</td>
<td>Supply #12</td>
<td>?Unit?</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>13</td>
<td>Supply #13</td>
<td>?Unit?</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>14</td>
<td>Supply #14</td>
<td>?Unit?</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Let's say you take inventory every month. The Previous amount is actually the Ending amount from last month's inventory, and cannot be edited here. The Received amount is the amount you purchased and placed in the chemical warehouse over the last month. Lastly, the Ending amount is your current stock on hand, derived from an actual physical inventory.

To calculate your usage for the month, the Received amount will be added to the Previous amount. Then, the Ending amount will be subtracted from this total, yielding your actual usage.

Click on the "Received Amount" button and enter the total number of units that were purchased for each supply over the last month. Click on the "Ending Amount" button and enter the total number of units actually sitting in the warehouse now for each supply. The "Supply Worksheet" selection discussed later provides you with a handy tool for taking your physical inventory.

The Weight-to-Volume icon is used for supplies bought in dry weight units, but used in fluid units. Click on the icon and enter the weight and specific gravity of the supply. The corresponding column, Received or Ending, will be filled in automatically.
Click on the "Save" button to save your figures, or the "Cancel" button to discard them.

**SUPPLY WORKSHEET**

This menu selection prints out a worksheet that is handy for taking your physical chemical supply inventory. It resembles the actual "Enter/Edit" dialog, with entries for each chemical, the Previous value, and blank spaces for the Received and Ending figures. Values may be written on the sheet in the chemical warehouse, brought to the computer, and entered in the dialog.

**PURGE DATABASE**

This selection functions exactly as for the R/S/R database. The only difference is that this selection works on the supply database. Please refer to the R/S/R section for more info.

**THE PLANT UTILITY METER DATA SUBMENU**

This menu selection contains four functions in a submenu which allow the user to track his utility usage, and compare it with actual production data gathered from the machines.

**ENTER/EDIT UTILITIES**

This selection enables entry and editing of utility usages. All twelve utilities are listed by name and meter unit, followed by the Previous and Current readings. Let's say you enter this data monthly. The Previous reading is merely last month’s current reading, and cannot be edited here. The Current reading is the current reading of the actual utility meter.
The usage (current minus previous readings) will be compared to the total production reported by the machine controllers (see the "Generate Report" section that follows). Highlight each utility and click on the "Current Reading" button to enter the current meter reading.

Click on the "Save" button to save your figures to the database (this a separate file, and has nothing to do with the Read/Save/Reset or Supply databases). To cancel and return to the Main Menu, click the "Cancel" button or hit the [Esc] key.

**UTILITY WORKSHEET**

This menu selection prints out a worksheet that is handy for collecting your current usage from your utility bills. It resembles the actual "Enter/Edit" dialog, with entries for each utility, along with the meter units, Previous value, and a blank space for the Current usage figures. It a good sheet to have on your desk while going through your utility bills. Values may be written on the sheet, brought to the computer, and entered in the dialog.

**PURGE DATABASE**

This selection functions exactly as the Purge Database for the R/S/R database. The only difference, of course, is that this selection works on the utility database. Please refer to that section of the manual for more information.
REPORTS
MENU

OVERVIEW

This menu contains all the reports available in PulseNet. Selections include reports that display accumulated formula run information, chemical usage, various historical data, and a large collection of plant-level reports.

UNDERSTANDING THE BASICS

There are several basic concepts and terms in reporting that, once understood, make the data in the reports more meaningful. Some are report-specific and will be discussed in the section for that particular report. The other more general terms are presented here:

• Load Time - the time accumulated from the moment the washer sets back down after being unloaded, until the next formula is started.
• Run Time - the time spent actually running the formula.
• Satisfy Time - the amount of formula Run Time spent satisfying conditions in the formula. These conditions include filling with water to a specific level, and steaming the wash bath to a specific temperature.
• Unload time - the time accumulated from the moment a formula ends, until the washer sets back down after being unloaded.
• Efficiency - the comparison of actual times to standard times. These standard times can come from either the formula itself, or user-specified norms set up in Edit Standard Times.
• Variance - the difference between the standard and the actual, expressed in the measured units rather than a percentage.
• Cost/CWT - cost per hundred-weight. It expresses the cost of the item (usually chemicals) for every hundred pounds (or kilograms) of laundry.
• Available Hours - the total time a washer was powered on and available to process goods.

FORMULA TOTALS

This selection displays the formulas run by all machines in the current group for the period displayed at the top of the dialog. This period is set by the last Read/Save/Reset, or with the Summarize Period dialog. The “Machine” option displays data for the selected machine only.
For each formula, the main grid displays the following information:

- **Ref** - the formula number.
- **Formula Name**
- **Runs** - how many times a formula ran.
- **Total Time** - the total time it took for all runs of the formula.
- **AvgTime** - the average time it took per formula run.
- **StdTime** - the standard time each formula should have run.
- **Eff%** - efficiency percentage, or the comparison of average to standard times.

Underneath the main grid are three additional grids, displaying more information about the runs of the highlighted formula. The “Other Totals” grid displays the waters used, watchdogs tripped during the formula runs, the weight and units of goods processed, and the gallons of water used per pound or kilogram of laundry. Note that the water information will be zero if the washer is not equipped with a water meter.

Next is the “Other Times” grid. It displays the total Satisfy Time, then breaks this total down into some of its components. The average per formula run is also listed.
Lastly, there is the “Standard” grid. For all items except watchdogs, the formula on the computer is scanned, and the total number of each event is tallied. Then, these totals are displayed, along with total time and average time from the Other Times grid.

If the Other Times and Standard times do not match, it indicates that some of the corresponding events were either skipped or redone. For example, an Other Times value of 30:33 for Fill and a Standard value of 54:56 indicates that some steps were skipped in the formula. The most likely scenario is an operator pausing the formula, then skipping steps at the controller. Likewise, an Other Times AutoChem of 45:23 and a Standard of 34:41 indicates that some steps were repeated. This can occur when canceling a formula, restarting it, and advancing to a point previous to where it was cancelled, thereby repeating already completed steps.

Clicking the "Group Totals" button will display data in the three smaller grids for all formulas combined. To return to the normal display, click the "Group Totals" button again. Clicking the "Change ID" button allows the user to view totals from another group of machines. The “Group” and “Machine” option box allows the report to toggle between the two modes, showing data either for all machines in the group, or just a single washer.

Clicking the Chart icon will chart the main data, and “CSV” will place it in a “CSV”-type file. In addition, the “Make PDF” icon will output the report to a PDF file suitable for Internet transfer, and the “View PDF” icon lets the user see the finished PDF file. The “E-mail” icon will e-mail the report to any valid e-mail address. The use of the E-mail dialog is discussed later.

**FORMULA EFFICIENCY**

This report will display all formulas, with the number of runs, and averages, variances, and efficiencies for Run Time and Weight. Also displayed is the cost per hundredweight of goods. At the bottom are figures for average Load/Unload Time.

Some columns warrant a detailed explanation. The Average Weight and it’s Variance and Efficiency are only useful on totally automated systems, and manually-loaded machines where the operator is prompted for weight before each formula run. An average of the actual weights processed is displayed as Average Weight, and the Variance and Efficiency are this average compared to the default Yield assigned to the formula. The idea is to report under-loading or over-loading of a machine.

The Cost/CWT (cost-per-hundredweight) displays the chemical cost per 100 pounds (or kilograms) of goods. Unlike most other reports, this one derives it’s chemical usage from scanning the formula itself, **not from data gathered from the machine controller**. This is because the controller keeps track of the chemicals used by all formulas, not on a per-formula basis. However, RatioMetric chemical additions have been taken into consideration, and the Average Weight is used in the calculation, not the default Yield of the formula.
This selection displays the total chemical usage by all machines in the currently selected group for the period displayed at the top of the dialog. This period is set by the last Read/Save/Reset, or with the Summarize Period dialog (discussed later in the manual). By clicking the “Machine” option, the data pertains to the selected machine only.

Each chemical used is displayed, along with its total usage. Inventory supply usage is displayed at the bottom. Also displayed will be the total cost of the chemicals, the total weight of goods processed, the cost per hundred-weight of goods, the totals units processed, and the cost per unit.

Clicking the “Exit” button will return you to the Chemical Totals screen. Clicking the “Change Group ID” button allows the user to view totals from another group. Clicking the “Print” button allows printing of all totals, and “Exit” exits the dialog.
PLANT EFFICIENCY REPORT

The Plant Efficiency Report displays data from all machines. It evaluates all formula runs, and compares target values with actual values. Total throughput and throughput per hour are also displayed, along with water usage. It is a good measure of performance, and an answer to the question, "How are we doing?".

Formulas are grouped together by machine. Each machine number is listed, along with the total number of formula runs it had. Next are the "Average" values in blue: the average load plus unload time per formula, it's efficiency, the average run time per formula, and the efficiency for that. Efficiencies are calculated by comparing expected time to actual time. The expected load and unload times are derived from the Standard Times (see "Edit Standard Times" dialog). The expected run times are taken from the Estimated Time shown in the Formula Editor. If the Empirical Time is set in the editor, however, that value is used instead.

Use the “Load/Unload Times” section at the bottom of the report to change the way Load and Unload Times are reported and compared. The Actual setting allows the report to perform as normal, reporting the actual time accumulated on the washers. The Standard setting replaces all actual load and unload times with the Standard Times. This will, of course, result in all Load/Unload Efficiencies being near 100% (some rounding may occur during calculations). Finally, the Limit setting allows the user to set a limit on the length of all actual load and unload times. Any time that exceeds this value will be replaced with the maximum time input by the user. This is handy for straightening out a report that has bad efficiencies due to not sleeping the machines and accumulating excessive “Waiting to Load” and/or “Waiting to Unload” time.
Listed next is the total available hours (machine "up-time"), and the efficiency, which is a measure of how much up-time was used running formulas. Lastly, the total production (in pounds or kilograms) is listed, together with the throughput.

To the left of each machine number is a check box. This check box decides which machines to include in the report. Whenever the check boxes are changed, the report needs to be refreshed by clicking the “Refresh” button with a green checkmark on it.

Below the machine grid are the totals for the entire plant. Note that the totals line contains "composite" averages for the blue columns. This prevents one unusually low or high value from throwing off the accuracy of the other results.

The Total Cost figure at the bottom displays the cost for all chemicals used by all formulas, and the Cost/CWT shows the chemical cost per hundred-weight of goods. Below this is the water usage per hundred-weight. The total Earned Labor Hours are listed next. This figure is calculated with data from the Standard Times.

The data in this report may be displayed for just a single group by clicking the “Group” option.

To switch from weight to count or vice versa, click the desired option in the box. To print the report, click the "Print" button. The "Exit" button or [Esc] key will return to the Main Menu.

PLANT FORMULA TOTALS REPORT
The Plant Totals Report takes pieces of data from several other reports and combines it for every machine in the plant. Over the specified period, each machine displays all formula runs, the average efficiency, the total weight or count of goods processed, and the total supply cost.

Like all reports, the chart button will graph the report, and the “CSV” button will generate a CSV file for use by other programs. The “Print” button will print all or only selected lines from the report, and the “Exit” button will return to the Main Menu.

**PLANT CHEMICAL TOTALS REPORT**

This report is like the Supply Usage screen of the normal Chemical Totals report, except chemical usage for the entire plant is presented. This is a quick and easy way to determine your chemical costs for the entire washroom.

![Plant Chemical Totals Report](image)

Also presented are total weight and count processed, along with their associated costs, such as Cost/CWT (cost per hundred-weight).

**PLANT PRODUCTION REPORT**

This function displays the output of the plant by number of runs, weight, and count. Formulas can be grouped together by classification, or viewed individually by choosing the “Formula” option. These classifications are the ones assigned in the formula editor.

The current reporting period appears at the top of the dialog. All formulas that have not been assigned classifications are lumped together at the bottom in the "Unassigned Formulas" category. Next, the totals for all classifications (including unassigned) are listed underneath.
You may also view production at the group or machine level by clicking in the option box. Doing so causes a "Change Group ID" (or "Change Machine ID") button to appear. You can change the current group or machine by clicking on this button. In this mode, the currently selected group or machine appears at the top of the dialog. The "Print" button will print the report, and the "Exit" button or [Esc] key will exit to the Main Menu.

PLANT SHIFT REPORT

This is a unique report, in that it will reread your database with dates you select, and display production data per shift. Note that the reading of the database will change the current reporting
period for any of the other reports. Also note that this report only displays useful data if you have been saving the shift number with your Read/Save/Reset’s. Refer to the “Shift Reporting” check box in the System Defaults section of the Setup Menu chapter.

For each shift, the total number of formula runs is listed per classification, along with the total weight produced. Individual buttons are available for charting, CSV generation, and printing, as well as a “Print All” button, and a PDF button that includes all shifts.

PLANT OPERATOR REPORT

This report is unique in that it concentrates on the washroom operator’s performance rather than machine performance. It contains many features that enable it to calculate an operator’s paycheck. As such, it is meant to examine small time periods, such as a week, two weeks, or a month. Periods over two months may overflow some fields and cause all 9's to be displayed.
For every machine, here is an explanation of each column:
♦ Runs - the number of completed (and optionally, cancelled) formulas ran on the machine.
♦ Standard Run Time - the time the completed formulas should have taken to run. This figure is taken from each formula’s Estimated Run Time, or Empirical Run Time if one is present. Cancelled loads, of course, are not included, which will hurt the formula run efficiency.
♦ Actual Run Time - the time the completed (and optionally, cancelled) formulas took to run, as reported by the machine controller. In other words, all time consumed running formulas.
♦ Run Efficiency - the comparison of Actual Run Time to Standard Run Time.
♦ Standard Load/Unload Time - the group’s Load Time and Unload Time, taken from the Edit Standard Times dialog, multiplied by the number of completed formulas ran. If any formula has a Load/Unload Time assigned to it individually in the formula editor, that time is used in place of the default group time for that formula.
♦ Actual Load/Unload Time - the load and unload time as recorded by the machine controller.
♦ Load/Unload Efficiency - the comparison of Actual to Standard Load/Unload times.
♦ Available Time - the sum of the Actual Run and the Actual Load/Unload times, as reported by the machine controller.
♦ Total Time Efficiency - the comparison of Available Time to Total Standard Time.

The red line below the machine list totals up all columns, except for the efficiencies, which are an average. Below this is displayed the average of all three efficiencies. As you can tell from the legends, this report displays an operator’s efficiency in running formulas, loading and unloading the machinery, and his combined, or “Machine”, efficiency.

To help the user decide whether or not to include Cancelled Loads in the calculations, here is an explanation of what happens when a formula is cancelled. Let’s say a formula takes 10 minutes to load, 60 minutes to run, and 10 minutes to unload. If the formula runs through to completion, 10 minutes will be logged into the Load Time, 60 minutes into Run Time, and 10 minutes into Unload Time. But, let’s say the formula gets cancelled half-way during it’s run, then restarted. The 10 minutes of Load Time will be logged normally, but the 30 minutes of Run Time will be added to the Cancelled Loads time. Also, any subsequent Unload and Load Time accrued before the formula is restarted is also added to Cancelled Loads. After the formula is restarted and finishes, the time it ran is logged into Run Time for that formula. This time could either be the entire run time if the entire formula ran, or the remaining 30 minutes if the operator skipped steps to get to the point where it was cancelled. Then after the washer is unloaded, the Unload Time gets logged normally. In this scenario, the “StdRun” figure would include only one standard formula run time, as only one formula ran to completion.

You can change the Available Time in the report by clicking the “Enter Total Time Worked” button, which is particularly useful in figuring operator payroll. You can enter a new Available Time in four different ways. The first and easiest way is to select “Total Time - Plant”, and simply type in the total hours and minutes worked during the currently summarized period. For greater detail and accuracy, or especially if time logs were kept at the machines, you can enter the total time worked for each machine individually. This is done by selecting “Total Time - Machine”.
If a time clock is utilized in your plant, or machine operator time logs were kept, it saves the supervisor from doing math by selecting “Time Card - Plant” or “Time Card - Machine”. This allows for input of “In” and “Out” times, and the automatic calculation of actual time worked.

This Time Card dialog is very user-friendly. Just click the mouse where you want to start entering times. The In and Out times may be entered in several ways to save time. For instance, 8:00 AM may be entered as “8”, “08”, “08:0”, or the full “08:00”. When a time has been entered, the [Tab] key will move the cursor to the next In or Out field for that day. For convenience, the [Enter] key will move to the start of the next day. *Note that all times must be entered in 24-hour clock format (which means that midnight is 00:00 and the start of a new day).*

For entering shifts that extend past midnight, there is a special rule that must be followed. As
an example, let’s say you are clocking in at 10:00 PM and out at 3:00 AM the next day. Enter
the 22:00 in an In field as normal. But, enter your clock-out time of 03:00 in the first Out field
for the next day. It does not matter which In field is used as long as no other entries follow it
for that day. But, the Out field used must be the first one in the next day.

You can save a time card by clicking the “Save Time Card” button. To load a previously saved
time card, click the “Load Time Card” button and make a selection. Be warned that after you
load a time card, any subsequent saves will overwrite the loaded time card, not save a new
one. This allows for editing a saved time card, or reloading one to play with different options.

Here is a final note on time entry. If time was entered at the “Machine” level, once all
machines have been input, you will be asked if the total hours worked should be calculated as
an “Average” or a “Summation”. The “Plant” level, and all other PulseNet reports, use the
Average method. Each machine’s Available Time is merely added together and divided by the
number of machines. If your needs require it, however, Summation may be chosen, which just
adds up each machine’s time to calculate the Available Time.

When all times have been entered, click the “Calculate” button to display the total hours and
minutes worked. If you then want a hardcopy of this pay period, enter a starting and an ending
date in the fields provided, and click the “Print” button.

Now on to payroll calculation. First of all, the Available Time is used to calculate an operator’s
overall efficiency. So, it is best to enter exact figures as described above. Then, this Machine
Efficiency is used to increase or decrease an operator’s pay accordingly. A “Base Rate” must
be entered, which is the hourly wage when operating the machinery normally. Then, up to ten
“Adjustments” may be made to the final pay. The default names of these adjustments may be
changed by double-clicking the mouse on them. Next, an hourly pay rate and the number of
minutes worked are then entered. If a new Available Time was not entered, or if it was on the
Plant level, the minutes for the adjustments are subtracted from the Base Pay calculation. If a
Time Card was used, the adjustment minutes are added to the total time worked. There are
even fields at the bottom to add a Bonus or subtract a Penalty from the final pay calculation.

If for some reason you wish to override PulseNet’s “Machine Efficiency”, you may click in the
box and type in a new percentage by which to multiply the Base Pay. To return to PulseNet’s
efficiency figure, just edit the box to be blank.

When all fields are entered, click “Calculate” button to display the final Pay for the operator.

To save a payroll “scheme”, you should double-click the Employee box and enter the operator’s
name. Then click “Save Employee” to save the adjustment names, and all wage figures, for
later retrieval. This retrieval is done by clicking the “Load Employee” button. An Employee’s
pay scheme may be changed at any time by editing the adjustment names and/or wages, and
clicking “Save Employee” again.

To prepare the report for printing, you may also want to edit the date that appears below the
employee’s name. Just double-click as before to enter another date, such as the ending date of
the current pay period.

The red Efficiency display (just above the yellow final Pay display) is especially helpful to the operator. It tells him or her just how much money was gained or lost due to work efficiency.

Once the operator’s pay has been calculated and printed, you may save the data to a database by clicking “Save Payroll Record”. This database can be used by the Plant Payroll Report to look up records, make graphs, and compare performance.

## PLANT PAYROLL REPORT

This report works in conjunction with the Plant Operator Report. The database created by that report’s pay period information is displayed, and powerful reports and charts can be generated. Data can be sorted by either employee or date. This information can then be printed to track payroll history. To print, use the mouse or keyboard to highlight the desired entries, then click

### SORTED BY | CHART BUTTON | WHAT TO HIGHLIGHT | RESULTS
---|---|---|---
Employee | Totals | Single employee over a desired time period | That employee’s average Efficiency, total Time, or total Pay during the
Employee | Totals | Multiple Employees over a desired time period | Compares average Efficiency, total Time, or total Pay among different
Employee | Period | Single employee over a desired time period | Displays the change in an employee’s Efficiency, Time, or Pay
Date | Totals | Same date for multiple employees | Displays the average Efficiency, total Time, or total Pay for that date.
Date | Totals | Multiple dates for all employees during that time | Displays each date’s average Efficiency, total Time, or total Pay
Date | Period | Same date for multiple employees | Compares Efficiency, Time, or Pay differences among different
“Print”. But the real power of this report is in the charts.

The type of chart generated, and the entries that need to be highlighted, depend on how the data is sorted. Use the following table to produce the desired chart.

**FORMULA HISTORY**

This report will pull historical information from the database, based on a date/time range specified by the user. These histories are added to the database every time they are uploaded by PulseNet.

Upon entering the dialog, the user is asked to specify a starting and an ending date/time. Then all machines are polled, and all formulas ran during the specified time period are displayed.

Clicking the "Upload" button uploads histories from all the machines, ensuring the display of all available data. Please note that doing so uploads all histories, including password and watchdog.
The report can show data for all machines (Plant), just the current group (Group), or the current machine alone (Machine). Note that at the Plant level, data for Catalyst Chemical Injection systems is omitted.

For every entry, the date and time each formula began is listed, along with it's number and name. Also listed is the weight of the laundry it processed. This figure is taken from the weight entered at the controller. Also listed is the Standard Weight, which is the default Yield from the formula editor.

Next, the formula’s times are given in minutes and seconds. Listed are the formula Load time, Run time, Satisfy time, and the Unload time. The Satisfy time is the portion of the Run time that was used meeting conditions in the formula, such as filling to a certain level or steaming to a desired temperature. Also shown is the Standard Run Time, which is derived from the formula itself, as displayed in the formula editor.

The user may click the "Sort by formula" button to rearrange the entries according to formula number, rather than date/time. Once sorted, a chart button will appear allowing the viewing of the data in a bar or pie chart. Data may only be graphed when sorted. Sorting also causes a summary to be displayed in the bottom grid, with totals beneath. This is very helpful to see the total runs of each formula, along with the total weight and times.

The “Chronology” button will display the start times for each phase of the formula run. Select a single formula, or “click-and-drag” the mouse to highlight multiple entries, then click the button. Not only are the formula phases shown, but also any passwords and watchdogs encountered during the formula’s run.

When in Group or Machine mode, click the "Change ID" button to view histories from other groups or machines. The “Upload” button will gather the current histories stored on the controller(s).

Clicking the “CSV” icon will place the histories in an “CSV file” format.

The "Print" button will send the data to the default Windows' printer. Clicking the "Exit" button or hitting the [Esc] key will return you to the Main Menu.

**HISTORY AVERAGES REPORT**

This report is a simplified formula history report, but with powerful filtering options. The main purpose of the report is to provide average Load, Run, and Unload times, plus their efficiencies. Weight calculations are also included. The power comes in with the ability to choose which groups to display, and how to limit or exclude times outside of a user-definable range.

The ability to choose groups allows the user to leave out machines he wishes to exclude from the average times calculations. An example would be a plant that has a fully automated washfloor, with some additional manual “pony” washers. The user may want to track average times associated with the automated machines only, and that is possible by excluding the group
The most powerful feature, however, is the ability to limit or exclude times that fall outside a specified range. Those values that do not meet the criteria are not included in the averages.

There are three modes of operation for the report: Normal, Limit, and Exclude. Normal will display the averages as usual using actual data. The Limit option will limit the upper bound of a time. For instance, if a formula runs 80 minutes, but it’s upper limit was set to 60 in the report, then 60 minutes is used for that formula in the averages calculation. Note that if a formula runs less than the lower limit, it is excluded from the report, not “limited”. If you set the lower formula limit at five minutes, and a formula ran two minutes, you would want to ignore it, rather than bump up the time to five minutes. These same rules apply to loads and unloads also.

The Exclude mode works similar to the Limit mode, except when a time exceeds its upper limit. In that case, the time is not included in the averages at all. This is a very powerful feature if used correctly. A plant that does not sleep or turn off their machines at night will accumulate excessive “Waiting to Load” and/or “Waiting to Unload” times. These excesses will give a very dismal efficiency rating in all the efficiency reports. To make these efficiencies more realistic,
the user can set an upper limit on the Load and Unload times, and either use these limits in the report, or dismiss them altogether.

Notice the “calculator” button in the dialog. It recalculates the averages, and must be clicked whenever the choice of displayed groups is changed while in the report.

LOAD HISTORY REPORT

The Load History Report shares many fundamentals of the Formula History report discussed previously. These fundamentals include pulling data from the database based on a user-specified period, and the ability to view data in the Plant, Group, or Machine mode.

The report itself looks similar to the “Chronology” portion of the Formula History report. This report, however, concentrates on loads rather than formulas. This is a unique report, in that it is the only PulseNet report where “partial runs” may be easily viewed.

“Partial runs” are what happens to reporting when a Read/Save/Reset occurs during a formula run. Typically, the loading and the starting of the formula are captured in one R/S/R, and the ending of the formula and the unloading in another. Since “totals” type data is not stored on the controller until the formula ends, the first R/S/R will contain no data (or give an operator credit) for the loading and starting of the formula. The entire process will be captured and credited in the second R/S/R. Over a week’s time, this scenario tends to balance itself out in the reporting, as loads started by one operator and lost are made up by his unloading loads he didn’t start. But this report will display the phenomenon and give credit where it is due.
The loads, formula runs, and unloads are displayed, along with their duration, standard time, and efficiency. The weight of goods processed is also displayed for the unloads.

A summary at the bottom gives totals and averages for the actions performed. For ease of reporting, if the Weight is not entered at the controller or supplied by an automated system, the “Use Formula Yields for Weight” box can be checked.

All major features (CSV, PDF, Print, Exit, etc) of this report function identically to the Formula History report.

LOAD EFFICIENCY

This report expands upon the Load History Report by adding a Gantt chart showing all machine activity in a “time-line”, plus adds “exception reporting”. The bulk of the program operates exactly as the Load History Report, except that only one day may be chosen at a time. A calendar is provided for selecting the desired day, and a “Set Times” button for selecting a time range, if desired.
Notice that besides the calendar, a Color Legend selector, and Show Excesses checkbox have been added. Both of these affect the appearance of the Gantt chart. The Color Legend tells the user what the colored bars in the chart represent. These colors can be changed to suit the user by double-clicking the mouse on the legend’s bar.

For instance, to change the color of the Formula Run bars in the Gantt chart, just double-click on the Formula Run box in the Color Legend, and select the desired color.

The Show Excesses checkbox can be used to hide the excess time used in loading, running, and unloading formulas. Sometimes this can be an advantage for users who are more interested in what specific processes were running at a particular time, and don’t want so many colors displayed. It makes the chart more readable if this is the user’s goal.

Excess time in this report is defined as the amount of time a process takes to complete, over and above the set standard. Load and Unload Time standards are set in the Edit Standard Times dialog discussed previously, and Formula Run standards are derived from the formulas themselves. Besides these global group standards, all three times can be set individually in the formula editor itself. Excessive time used for any of these processes immediately follows the process itself in the Gantt chart.

For example, the dark blue bar labeled “Formula Run” is followed by a light blue bar marked “Excess”. Both bars combined represent how long the formula took to run. However, the light blue bar indicates how long the formula ran past it’s standard time. In other words, it points out an inefficiency in the running of the formula.

Scrolling through the day’s run, and zooming in and out of the timeline are also available. To scroll through the day’s events, just click and drag the mouse anywhere in the tan-colored area at the top. To zoom in and out, hold down the Ctrl key on the keyboard and click and drag the mouse on the Scale Bar. This will decrease or increase the timeline divisions, making the bars longer or shorter, showing more or less elapsed time.

There is also a tab at the bottom of the dialog for Comparisons. This page will compare excessive times between each machine, and also each formula. Not all machines or formulas are
listed, only those that had excessive processing times, making these entries “exception reporting”.

Each list can be graphed according to Load, Run, or Unload excessive times, and the lists may also be printed.

**MACHINE EFFICIENCY**

This report compares all machines’ average Run Times for each formula it ran. It is a good indicator of how well each machine processed a particular formula.

At the end of each formula row, the Average is given, which is the average Run Time of that
formulas on all machines that ran it. Next is listed the formula’s Standard Run Time, followed by an overall efficiency for all machines.

There are options at the bottom of the report to filter out or limit formulas that run less than a user-supplied number of minutes, or more than a specified number of minutes. This helps in taking out the occasional “wild” formula and making the averages more realistic.

**EFFICIENCY HISTORY**

This is a unique report that combines historical data with all possible efficiencies, and is the only one that displays Satisfy time efficiencies. It also displays this data, along with Machine Time and it’s efficiency, on a per-formula basis. Think of Machine Time as “Machine Utilization”, telling the user how productive the equipment has been. This report is very useful in determining which formula run may have been responsible for good overall efficiencies.

This report, like other historical reports, may be viewed in the Plant, Group, or individual machine mode. This, along with the arbitrary date/time picker, allows the user to examine data from any combination of machines and time periods.

For the efficiencies to be accurate, standard default times must be set in the “Edit Standard

This report, like other historical reports, may be viewed in the Plant, Group, or individual machine mode. This, along with the arbitrary date/time picker, allows the user to examine data from any combination of machines and time periods.

For the efficiencies to be accurate, standard default times must be set in the “Edit Standard
Times” dialog located in the Setup menu of PulseNet. These standard times will be compared to the actual times reported by the equipment, and displayed in the appropriate columns.

Note that Standard Satisfy Time and Efficiency are just ballpark figures, and should not be taken as seriously as the other data in the report. The reason is that the machine controller accumulates Satisfy Time in a concurrent manner. This means that if a formula step contains instructions for Fill, Add Chemical, and Steam, these Satisfy Times are recorded overlapping and all at once.

Since this is an historical report, the weights displayed are those that were actually entered at the controller, or reported by an automated system. If your other reports are reporting weight based on the formula’s default yield, you may use these values here also by checking the “Use Formula Yields for Weight” check box.

This report is also unique in that different “views” are available. There are thirty-five columns in this report, many more than will fit on your screen or on a printout. The View option box allows selection of the default view, or one of three custom views. Each custom view is configured by clicking on the “Define” button and selecting the columns you wish to see.

Due to having to abbreviate some column names, here is an explanation of the not-so-obvious columns in the report:

- **Ld/Unld** - the Load Time combined with the Unload Time of the same formula.
- **UnldSt** - the time on the clock that Unloading started.
- **LdEnd** - the time on the clock that Loading ended for the next formula.
- **TurnAr** - the Turn Around time between the current formula and the next one. It is the combination of a formula’s Unload Time and the next formula’s Load Time.
- **LUMach** - the total time a machine spent processing a single formula. This includes the formula’s Load Time, Run Time, and Unload Time. The LU stands for Load/Unload.
- **TAMach** - the total Turn Around time a machine spent processing a formula. It starts when the formula begins running, continues through the Unloading process, and ends when the next Load is loaded and it’s formula is ready to start. The TA stands for Turn Around.

Notice that both LUMach and TAMach are indicators of “machine utilization”. In other words, how well the machine was loaded, ran, and unloaded.

**EVENT HISTORY**

This report combines Password and Watchdog histories into one screen. It shares many fundamentals of the Formula History report discussed previously. These fundamentals include pulling data from the database based on a user-specified period, the ability to view data in the Plant, Group, or Machine mode, and having to sort entries before they can be charted.

For each password, the date and time it occurred, the action, and the password level are listed. Clicking the "Sort by action" check box will rearrange the passwords according to action, and show the chart button. Sorting also causes a summary to be displayed in the right-hand grid.
This displays the total number each password was entered.

The various watchdogs tripped on each machine are displayed in the bottom half of the dialog. A watchdog is a sort of alarm, set off by the machine itself, or by exceeding a user-defined value attached to a specific machine function. For example, pressing the Emergency Stop button, or having the RPM's drop below a preset value, will trip a watchdog.

All major features of this report function identically to the Formula History report.

**CHEMICAL FORECAST**

This “report” is very handy for calculating what chemical supplies you will need to process a
known amount of goods. This allows the user to buy chemicals ahead of time, and also keep the in-house chemical inventory to a minimum.

For instance, if you know approximately what you will be running next month, just enter in the formula numbers and how much total weight each formula will process. To do this, click the “Add Formula” button. After you select a formula, you will be prompted for the total weight to process. Just keep changing groups and entering formulas until done.

In case your formulas don’t have default Yields set up, you can check the “Prompt for yield” box and you will be asked for the weight each formula process in a single run. This is also useful for ratiometric formulas, where chemicals are added by a percentage of the load weight, instead of a fixed amount.

When done entering formulas, click the “Calculate” button to see the total chemical supply usage, along with the weight, cost, and cost per hundred-weight.

**PLANT SUPPLY REPORT**

This report shows actual inventory supply usage. This supply usage is the physical inventory entered in the "Enter/Edit Data" dialog discussed earlier. Before the report is generated, you will be asked for the starting and ending dates of the period you wish to examine.
In the report, all 100 supplies are listed, along with their units of measurement, the cost per unit, the usage reported by the controllers, and the cost.

You may click the "Print" button to print the report, or click "Exit" to return to the Main Menu.

**PLANT UTILITY REPORT**

This selection displays a utility consumption report. It is a good measure of how much you are spending on utilities in the laundry. This utility usage is calculated from figures entered in the "Enter/Edit Data" dialog discussed earlier.

Before the report is generated, you will be asked for the starting and ending dates of the period you wish to examine.
In the report, all twelve utilities are listed, along with their meter units, the usage over the period listed at the top of the dialog, and the cost.
OVERVIEW

The Tunnel menu contains selections specific to tunnel washers. For tunnels, these selections should be used instead of any counterparts they may have elsewhere in the menu bar.

TUNNEL CONFIGURATION

![Tunnel Configuration Diagram]
This selection is for configuring each individual compartment in the tunnel. There may be up to 24 compartments defined. There is always an additional “Compartment #0”, called “Wetout”. Each compartment needs to have it’s water supplies, drain, steam, and other options defined.

First, set the number of compartments in the text box at the top of the dialog, then click the “Change” button. Each compartment number will then appear in the “Compartment” list box. Highlight each compartment one at a time and establish every compartment’s configuration as described below:

- Select the correct compartment type, single or tandem, in the "Type" drop-down list box.
- Similarly, select the correct direction in the "Water Flow" list box. Forward means the water flows toward the end of the tunnel, in the direction of higher numbered compartments. Reverse water flows toward the beginning of the tunnel, through the lower numbered compartments.
- In the “Reuse” box, there are options for reuse water coming from other compartments. If the currently selected compartment uses such water, click the source's compartment number. If the current compartment receives no water from any other compartment, click “None”.
- In the "Fill & Flow Rate" box, there are check boxes for Hot, Cold, and Divert water valves. Check all water sources that apply to the current compartment.
- For each water supply, the flow rate must also be entered in the “Fill & Flow Rate” box. If the compartment has more than one water source, also fill in the flow rate for "Multiple".
- In the “Options” box, check all items that apply to the selected compartment. Selecting certain items will enable or disable other items throughout the entire configuration dialog. For example, the “Steam” check box will be disabled unless the “Temp Sensor” box is checked, and the "K Factor" and "Deadband" text boxes are disabled unless "Water Meter" is checked. Be sure to fill in these values if a water meter is present.
- In the “Zone” box, select the zone for the compartment. Click on the rainbow icon to select a color for the zone. Adjacent zones should have different colors assigned to them, for readability in the Graphic Panel dialog. Lastly, type in a descriptive name in the “Name” text box. Zones are invalid and will not be saved unless named.

After each compartment has been configured, the user must go back and assign each level switch to the compartment whose water supply it controls. This is done by first selecting each compartment in the “Compartment” list box that uses a level switch. This will enable the "Compartment" box, which shows every compartment where water is supplied. Check the compartment whose water the level switch controls. Repeat this procedure for all level switches in all compartments.

Lastly, for the entire tunnel, the user needs to set the number of "pre-process" positions in the "Pre-load Positions" list box. The number must range from one to sixteen.

The user may click the “Print” button to print a listing of each compartment’s configuration, for reference or archival purposes.
“Change ID” will allow you to work on another group of tunnel washers. “Save” will save your configuration, provided you enter the appropriate password. This password may be obtained from the tunnel vendor or Softrol. Lastly, the “Exit” button will return to the Main Menu screen.

**TUNNEL DISPLAY**

This selection displays a graphic representation of the tunnel, showing each compartment’s configuration. Listed beneath this is an assortment of information specific to the tunnel.

Each compartment can have many features and options, all shown above and below the compartment. Pausing the mouse inside a compartment will display its associated zone name.

Above the tunnel is a white row of boxes displaying any reuse water plumbed into each compartment, and a blue row showing any hot, cold, and divert water valves that are available. Pausing the mouse over one of these boxes will show which level switch(es) control the
displayed water valve. Underneath this is an icon for a level switch if one exists. This switch icon will blink if the level it controls is not satisfied. Finally, a water fill icon is shown on top of a compartment if any water is available for the compartment's use. If water is currently entering the compartment, the appropriate water legends will blink and the icon will be animated. In addition, the Press graphic will show the plunger down (and colored red) if the press is busy.

Below each compartment, steam pipes and drain valves are shown if these options are present. Overflow drains are pipes with curved ends in the compartment itself. Below the compartments are chemical flasks if that compartment has any chemicals assigned to it. As before, all these options will become animated if they are active. Clicking the mouse on an animated chemical flask will display the desired and actual chemical amounts as they are pumped. Clicking on it anytime else will display the last chemicals injected.

Below the tunnel itself are rows of data for each compartment. They are, from top to bottom, Compartment Number, Customer Number, Item Number, Lot Number, Formula Number, Weight, Desired Temperature, and Actual Temperature. Pausing the mouse over a Compartment Number button will display the customer number/name, item number/name, and/or lot number/name associated with that load (right-clicking the button will allow you to set these options). Left-clicking on the button will allow you to edit these numbers, as well as the formula and weight. Pausing the mouse over a Formula Number will display that formula’s name. Clicking the mouse on it will display the formula itself.

In the lower left-hand corner of the dialog is an abbreviated version of the tunnel controller, showing the LCD lines and the three LED readouts.

To the right are four machine icons - Machine Status, Hold, Watchdog, and Forward/Reverse/Transfer. If the tunnel is off, all icons except Watchdog are replaced by international “No” symbols. If on, they appear and display current tunnel status as defined below:

♦ Machine Status: normal if running, disabled (grayed) if tunnel is not running,
♦ Hold: normal is tunnel is in hold mode, disabled if not.
♦ Watchdog: normal if a watchdog is being tripped, disabled if not.
♦ Forward/Reverse/Transfer: clockwise green arrow if rotating forward, counter-clockwise red arrow if rotating backward, circular yellow arrow if the tunnel is transferring loads.

Next to these are buttons for Accumulated Data and Hold Data. They will toggle the abbreviated controller display and aforementioned icons and button with a box displaying corresponding tunnel information. Click the Print icon in the data box to print the data, and use the Exit icon to return to the normal display.

Next is a button for Composite Formula. When clicked, it will display the tunnel’s Composite Formula, which is made up of the active parts of each compartment’s formula.

The "Preload" (left arrow) button will display up to 16 preload positions, and the "Postposition" (right arrow) button will show loads that have already been processed and exited.
the tunnel. The "Graphic Panel" button is duplicated here for the user's convenience, and will display the entire tunnel controller.

The “Change ID” button will view other tunnels’ data, and the “Exit” button exits the dialog.

The “Ticket Printing” selection allows the user to set up the ticket printer, specify the source of the ticket, and set the format. If you are not using standard 8.5” X 11” paper, be sure to set the ticket printer to use a custom paper size which corresponds to the ticket.

Ticket Printing continuously polls the ArcNet network, and prints tickets for all finished loads as they are available. Selecting “Press” will print a ticket for the goods exiting the press each time the tunnel transfers. Selecting “Dryer” will print a ticket each time a load exits a dryer. **There must be an extra network card in the computer devoted solely for this purpose. It's ID number must be 255, and no other machinery can be assigned this network number.**

Discussed later, you may create databases for Customer Data, Item Names, and Lot Names. These will associate names to the numbers, and will appear on the tickets if so desired.

If the “Print Tickets” box is checked, ticket(s) will be printed; otherwise they are not. The “Ticket Size” box at the bottom determines if a Standard or Custom ticket will be printed. Standard tickets only include the most important data, and may be printed on standard 8 1/2” X 11” paper, or small tickets, such as 3” X 6”. Custom tickets let the user select which PPDR
data to include on the ticket, and can be set up by clicking the “Format” button.

Clicking the “Bar Code” button displays a configuration dialog for adding barcodes to the bottom of printed tickets.

It is beyond the scope of this manual to teach barcode symbology and terminology, but the most critical options for barcodes are user-selectable, and all popular styles (such as Code 39, 2 of 5, etc.) are supported. If the “Enabled” box at the bottom is checked, the selected data will be printed in barcode format on each ticket.

If more advanced formatting of the barcode message is needed, choose the “Barcode Format” option, and set up the format by clicking the “Barcode Format” button.

You may assign up to three main fields using the drop-down list boxes. If a field is a number, you may discard any leading zeros, or only use a specific character range. These fields may be separated by one or more characters. In addition, a prefix and/or suffix may be added to the message by entering the appropriate information. An example of what your message will look like, using the numbers at the bottom, is displayed in the “Example” box.

Ticket printing continues only while the Tunnel Display dialog remains active. This dialog
may be minimized, so the user can work on formulas, view reports, etc. However, under no circumstances should any communication with the machine network be attempted unless the Tunnel Display dialog is paused. To do so, click on the “Pause” button, which halts tunnel communication and display updating. Press ticket printing is also paused, but the printing of Dryer tickets is unaffected. The “Resume” button will return to updating the tunnel display. These features are meant to be used as follows: pause the tunnel display, minimize the dialog, and perform your communication, such as downloading formulas. Then, restore the Tunnel Display from the Windows taskbar and resume communications. If you are printing Press tickets, this process should be started immediately after a transfer, so you will have the maximum time for your communication task, and minimize your chances of missing a ticket.

**CUSTOMER DATA**

This menu selection allows the user to assign customer names to numbers. This allows numbers used and stored on the tunnel controller to relate to a descriptive name.

To add a new number and name, click on the “Add” button and enter the appropriate data. You are not allowed to enter duplicate numbers. Once entered, it will be added into the list in the correct position (the list is sorted by number).
To delete an entry, simply highlight the desired customer by clicking on it with the mouse, then click the “Delete” button.

To edit an existing customer name, highlight it as described above and click on the “Edit” button. You can then change the name associated with that number.

The “Print” buttons will print the list of customer names and numbers. The “123” button will print the list sorted by number, and the “ABC” button will sort by customer name.

**ITEM NAMES & LOT NAMES**

These dialogs function identically to the Customer Data dialog, but allow for the assignment of names to item and lot numbers.

**PRESS HOLD HISTORY**

This selection will display the last 200 press holds logged into the press controller. It functions exactly as the Watchdog History report discussed earlier, so no further elaboration is necessary.

**CUSTOMER HISTORY**

This report is similar to the standard Formula History report, except the associated customer is also available. For each load, the date, time, customer name and number, formula number and name, and weight are displayed.

To view a summary of each customer’s total weight and loads, highlight the desired entries and click the “Weight/Customer” button. Also displayed will be the total weight and loads for the highlighted entries. Similarly, highlighted entries may be printed by clicking the “Print” button. Different time periods may be chosen using the “calendar” button.
Since tunnels produce loads very quickly, the database can grow quite large. To accommodate this, there are buttons for “Purge Database” and “Compact Database”. Also listed are the dates contained within the database, the total number of entries, and the size of the database file itself. If the report response becomes slow, or the database size approaches two gigabyte (2 GB), the database needs to be purged, then compacted. The database should always be compacted after a purge. This is because a purge makes the data inaccessible, but leaves it in the database. Compacting will “take out the trash” and make the database smaller.

The “Change ID” button will view another machine’s histories, “Upload” will retrieve the latest list of histories from the controller, and the “Exit” button exits the dialog.

**TUNNEL TOTALS**

This report will display accumulated totals and hold information. It is the same data you see by clicking the “Accumulated Data” and “Hold Data” buttons in the Tunnel Display.

The data you see is retrieved from the controller and reset at the same time a Read/Save/Reset is performed. Like other totals-type reports, such as Formula Totals and Plant Efficiency, the time period displayed can be changed using the Summarize Period dialog.
## Tunnel Totals

**Machine #9**

05-21-2000 15:04 to 05-25-2000 15:35

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<th>Value</th>
</tr>
</thead>
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</tr>
<tr>
<td>Run Time</td>
<td>0065:11:10</td>
</tr>
<tr>
<td>Hold Time</td>
<td>0014:46:05</td>
</tr>
<tr>
<td>Adjusted Run</td>
<td>0050:25:05</td>
</tr>
<tr>
<td>Efficiency</td>
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</tr>
<tr>
<td>Total Transfers</td>
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<tr>
<td>Transfers/Hour</td>
<td>000020</td>
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<tr>
<td>Total Weight</td>
<td>117506</td>
</tr>
<tr>
<td>Weight/Hour</td>
<td>001803</td>
</tr>
<tr>
<td>Avg Wt/Transfer</td>
<td>000090</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hold Time</td>
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</tr>
<tr>
<td>Press Hold Time</td>
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<td>External Hold Time</td>
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<td>Machine Hold Time</td>
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<tr>
<td>Number</td>
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SEQUENCE WASHER
MENU

OVERVIEW

The Sequence Washer menu contains selections specific to sequential washers. For these machines, this menu should be used instead of any counterparts the selections may have elsewhere in the menu bar.

MACHINE CONFIGURATION

This selection is for configuring each individual module in the washer. There may be up to 24 modules defined. There is always an additional “Module #0”, called “Wetout”. Each module needs to have its water supplies, drain, steam, and other options defined.

First, set the number of modules in the text box at the top of the dialog, then click the “Change” button. Each module number will then appear in the “Module” list box. Highlight each module one at a time and establish each one’s configuration as described below:

- Select the correct module type, single or tandem, in the "Type" drop-down list box.
- Similarly, select the correct direction in the "Water Flow" list box. Forward means the water flows toward the end of the washer, in the direction of higher numbered modules. Reverse water flows toward the beginning of the washer, through the lower numbered modules.
- In the "Waters & Flow Rate" box, there are check boxes for Fresh, Reuse, and Press water valves. Check all water sources that apply to the current module.
- In addition, check “Meter” for all selected water sources that are metered.
- For each water supply, the Flow Rate or K-Factor must also be entered. The value is labeled according to whether or not the water is metered.
- In the “Options” box, check all items that apply to the selected module. Selecting certain items will enable or disable other items. For example, the “Steam” check box will be disabled unless the “Temp Sensor” box is checked.
- In the “Zone” box, select the zone for the module. Click on the rainbow icon to select a color for the zone. Adjacent zones should have different colors assigned to them, for
readability in the Graphic Panel dialog. Lastly, type in a descriptive name in the “Name” text box. Zones are invalid and will not be saved unless named.

Lastly, for the entire washer, the user needs to set the number of "pre-process" positions in the "Pre-load Positions" list box. The number must range from one to sixteen.

The user may click the “Print” button to print a listing of each module’s configuration, for reference or archival purposes.

“Change ID” will allow you to work on another group of sequence washers. “Save” will save your configuration, provided you enter the appropriate password. This password may be obtained from the washer vendor or Softrol. Lastly, the “Exit” button will return to the Main Menu screen.

CHEMICAL CONFIGURATION

This dialog is necessary to setup the chemicals used in the washer. All fifty possible chemicals are displayed, along with their values.
The Units/Lb are necessary for RatioMetric chemical additions (Add Chemical by Percent), and are the same values worked with in the Edit Chemical Assignments dialog. They may be edited either in that dialog or in this one.

Similarly, the Waters & Flow Rate may also be edited here or in Machine Configuration.

The Secs/Unit value is for calibration of the chemicals, and may only be setup here.

**SYSTEM DISPLAY**

This selection displays a graphic representation of the sequence washer and associated dryers. For the washer, each compartment’s configuration is shown, and listed beneath this is an assortment of information specific to the washer.
Each module can have many features and options, all shown above and below the module. Pausing the mouse inside a module will display its associated zone name.

Above the washer is a blue row of boxes showing any Fresh, Reuse, and Press water valves that are available. Underneath this is an icon for a level switch if one exists. This switch icon will blink if the level it controls is not satisfied. Finally, a water fill icon is shown on top of a module if any water is available for the module's use. If water is currently entering the module, the appropriate water legends will blink and the icon will be animated. In addition, the Press graphic will show the plunger down (and colored red) if the press is busy.

Below each module, steam pipes and drain valves are shown if these options are present. Below the modules are chemical flasks if that module has any chemicals assigned to it. As before, all these options will become animated if they are active. Clicking the mouse on an animated chemical flask will display the desired and actual chemical amounts as they are pumped. Clicking on it anytime else will display the last chemicals injected.
Below the washer itself are rows of data for each module. They are, from top to bottom, Module Number, Customer Number, Item Number, Lot Number, Formula Number, Weight, Desired Temperature, and Actual Temperature. Pausing the mouse over a Module Number button will display the customer number/name, item number/name, and/or lot number/name associated with that load (right-clicking the button will allow you to set these options). Left-clicking on the button will allow you to edit these numbers, as well as the formula and weight. Pausing the mouse over a Formula Number will display that formula’s name. Clicking the mouse on it will display the formula itself.

In the lower left-hand corner of the dialog is an abbreviated version of the washer controller, showing the LCD lines and the three LED readouts.

To the right are four machine icons - Machine Status, Hold, Watchdog, and Forward/Reverse/Transfer. If the washer is off, all icons except Watchdog are replaced by international “No” symbols. If on, they appear and display current washer status as defined below:

♦ Machine Status: normal if running, disabled (grayed) if the washer is not running,
♦ Hold: normal is washer is in hold mode, disabled if not.
♦ Watchdog: normal if a watchdog is being tripped, disabled if not.
♦ Forward/Reverse/Transfer: clockwise green arrow if rotating forward, counter-clockwise red arrow if rotating backward, circular yellow arrow if the washer is transferring loads.

Next to these are buttons for Accumulated Data and Hold Data. They will toggle the abbreviated controller display and aforementioned icons and button with a box displaying corresponding washer information. Click the Print icon in the data box to print the data, and use the Exit icon to return to the normal display.

Next is a button for Composite Formula. When clicked, it will display the washer’s Composite Formula, which is made up of the active parts of each module’s formula.

The "Preload" (left arrow) button will display up to 16 preload positions, and the "Postposition" (right arrow) button will show loads that have already been processed and exited the washer. The "Graphic Panel" button is duplicated here for the user's convenience, and will display the entire washer controller.

The “Change ID” button will view other Sequence Washer’s data, and the “Exit” button exits the dialog.

The “Ticket Printing” selection allows the user to set up the ticket printer, specify the source of the ticket, and set the format. If you are not using standard 8.5” X 11” paper, be sure to set the ticket printer to use a custom paper size which corresponds to the ticket.

Ticket Printing continuously polls the ArcNet network, and prints tickets for all finished loads as they are available. Selecting “Press” will print a ticket for the goods exiting the press each time the washer transfers. Selecting “Dryer” will print a ticket each time a load exits a dryer. **There must be an extra network card in the computer devoted solely for this purpose. It’s ID**
number must be 255, and no other machinery can be assigned this network number.

Discussed later, you may create databases for Customer Data, Item Names, and Lot Names. These will associate names to the numbers, and will appear on the tickets if so desired.

If the “Print Tickets” box is checked, ticket(s) will be printed; otherwise they are not. The “Ticket Size” box at the bottom determines if a Standard or Custom ticket will be printed. Standard tickets only include the most important data, and may be printed on standard 8 1/2” X 11” paper, or small tickets, such as 3” X 6”. Custom tickets let the user select which PPDR data to include on the ticket, and can be set up by clicking the “Format” button.

Clicking the “Bar Code” button displays a configuration dialog for adding barcodes to the bottom of printed tickets.

It is beyond the scope of this manual to teach barcode symbology and terminology, but the most critical options for barcodes are user-selectable, and all popular styles (such as Code 39, 2 of 5, etc.) are supported. If the “Enabled” box at the bottom is checked, the selected data will be printed in barcode format on each ticket.

If more advanced formatting of the barcode message is needed, choose the “Barcode Format” option, and set up the format by clicking the “Barcode Format” button.

You may assign up to three main fields using the drop-down list boxes. If a field is a number, you may discard any leading zeros, or only use a specific character range. These fields may be separated by one or more characters. In addition, a prefix and/or suffix may be added to the message by entering the appropriate information. An example of what your message will look like, using the numbers at the bottom, is displayed in the “Example” box.

Ticket printing continues only while the System Display dialog remains active. This dialog may be minimized, so the user can work on formulas, view reports, etc. However, under no circumstances should any communication with the machine network be attempted unless the System Display dialog is paused. To do so, click on the “Pause” button, which halts tunnel communication and display updating. Press ticket printing is also paused, but the printing of Dryer tickets is unaffected. The “Resume” button will return to updating the washer display. These features are meant to be used as follows: pause the System Display, minimize the dialog, and perform your communication, such as downloading formulas. Then, restore the System Display from the Windows taskbar and resume communications. If you are printing Press tickets, this process should be started immediately after a transfer, so you will have the maximum time for your communication task, and minimize your chances of missing a ticket.

**CUSTOMER DATA**

This menu selection allows the user to assign customer names to numbers. This allows numbers used and stored on the tunnel controller to relate to a descriptive name.

To add a new number and name, click on the “Add” button and enter the appropriate data. You
are not allowed to enter duplicate numbers. Once entered, it will be added into the list in the correct position (the list is sorted by number).

To delete an entry, simply highlight the desired customer by clicking on it with the mouse, then click the “Delete” button.

To edit an existing customer name, highlight it as described above and click on the “Edit” button. You can then change the name associated with that number.

The “Print” buttons will print the list of customer names and numbers. The “123” button will print the list sorted by number, and the “ABC” button will sort by customer name.

ITEM NAMES & LOT NAMES

These dialogs function identically to the Customer Data dialog, but allow for the assignment of names to item and lot numbers.

PRESS HOLD HISTORY

This selection will display the last 200 press holds logged into the press controller. It functions exactly as the Watchdog History report discussed earlier, so no further elaboration is necessary.

CUSTOMER HISTORY

This report is similar to the standard Formula History report, except the associated customer is also available. For each load, the date, time, customer name and number, formula number and name, and weight are displayed.

To view a summary of each customer’s total weight and loads, highlight the desired entries and click the “Weight/Customer” button, or just click the button and select “All”. Also displayed will be the total weight and loads for the selected entries. In additional, any customer
highlighted in the totals list will populate two other lists. These lists break down each customer’s runs into classes and formulas ran.

Different time periods may be chosen using the “calendar” button.

Since tunnels produce loads very quickly, the database can grow quite large. To accommodate this, there are buttons for “Purge Database” and “Compact Database”. Also listed are the dates contained within the database, the total number of entries, and the size of the database file itself. If the report response becomes slow, or the database size approaches two gigabyte (2 GB), the database needs to be purged, then compacted. The database should always be compacted after a purge. This is because a purge makes the data inaccessible, but leaves it in the database. Compacting will “take out the trash” and make the database smaller.

The “Change ID” button will view another machine’s histories, “Upload” will retrieve the latest list of histories from the controller, and the “Exit” button exits the dialog.

**TUNNEL TOTALS**

This report will display accumulated totals and hold information. It is the same data you see by clicking the “Accumulated Data” and “Hold Data” buttons in the Tunnel Display.
The data you see is retrieved from the controller and reset at the same time a Read/Save/Reset is performed. Like other totals-type reports, such as Formula Totals and Plant Efficiency, the time period displayed can be changed using the Summarize Period dialog.
OVERVIEW

SCADA is an acronym for “Supervisory Control And Data Acquisition”. A standard term in industry, it’s application in PulseNet involves the recording and display of data from a running machine. This can provide very useful information, such as exactly what transpired during the run of a particular formula. Due to hardware constraints, the selections in this menu operate only on machine controllers equipped with the K4 processor.

RECORD/PLAYBACK

This selection handles the recording and playback of machine data, using the “VIP” graphic panel. Although the VIP panel doesn’t graphically look like the actual controller, it displays much more data.

The data displayed is basically self-explanatory, but popup “tooltips” will appear to help explain what a data figure is representing. These tooltips popup whenever the mouse is paused over a numeric or text value.

On the left side of the display is a user-selectable display area. There are options for “Chemicals”, “Dispensers”, and “I/O”. The viewing option may be changed independent of whether the display is currently monitoring the machine or not.

To record a machine’s activity, such as a formula run, first choose the desired “Poll Rate”. There are choices for half a second, one second, three seconds, and six seconds. This tells the program how often to retrieve and store data from the machine. A larger poll rate, such as six seconds, will make a smaller data file (each hour of recording at six seconds uses 192,000 bytes, or 187.5K, of hard disk space).

To monitor the machine in the Record mode, check the “Monitor” check box. This will display machine activity during recording or when idle. However, when recording, the display is updated at the current poll rate, not the usual monitoring rate.

Checking the “Auto-Record” box will cause the program to monitor the machine, and only
record when formulas are ran. This allows the user to leave the recorder on all day, and automatically create individual formula run files.

Note that an automatic Read/Save/Reset will not interfere with recording or monitoring, other than to pause recording. Also, when a communication error occurs, an “international NO symbol” appears over the animated washer icon, and any recording is paused. It will resume when communications do.

When done, click the “Stop” button to cease recording and close the database file. This file will be located in the machine’s folder, and named sequentially. For example, if recording machine #1, the first SCADA file will be something like C:\Pwpm\HOME.SITM1\Scada000.wet. The next file will be named Scada001.wet, and so on.
To play back a SCADA file, change the mode option from “Record” to “Play”. Then, click the “Browse” button and select the desired file (hint: while browsing, an old file may be deleted by highlighting it and clicking on “Delete”). All the playback controls work exactly like a VCR or CD player, and therefore will not be discussed here. The exception is the “Watchdog” button, which will stop playback and advance to the next watchdog (if one exists). The slider underneath the playback buttons may be moved with the mouse to go to any desired point in the recording.

The left-hand date/time display (cyan color) shows the file’s start date and time. The black right-hand display is for the current position in the file.

Although disabled during playback, the Poll Rate drop-down list will display the rate at which the file being played was polled.

**REPORT**

This dialog displays all data points in a recorded file, and lists the high and low values encountered.

```
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Formula</th>
<th>Level</th>
<th>Temp</th>
<th>RPM</th>
<th>AuxAna</th>
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<tr>
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<td></td>
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<td>086</td>
<td>000</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
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<td></td>
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<td>000</td>
<td>0000</td>
</tr>
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<td>095</td>
<td>032</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
<td>09:31:37</td>
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<td>000.4</td>
<td>086</td>
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<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
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<td>089</td>
<td>024</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
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<td>006.9</td>
<td>092</td>
<td>025</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
<td>09:31:55</td>
<td>Shop Towels</td>
<td>007.9</td>
<td>094</td>
<td>026</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
<td>09:32:01</td>
<td>Shop Towels</td>
<td>005.4</td>
<td>095</td>
<td>026</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
<td>09:32:07</td>
<td>Shop Towels</td>
<td>009.7</td>
<td>096</td>
<td>022</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
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<td>Shop Towels</td>
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<td>097</td>
<td>025</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
<td>09:32:20</td>
<td>Shop Towels</td>
<td>014.3</td>
<td>098</td>
<td>027</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
<td>09:32:26</td>
<td>Shop Towels</td>
<td>015.4</td>
<td>098</td>
<td>024</td>
<td>0000</td>
</tr>
<tr>
<td>03-06-2002</td>
<td>09:32:32</td>
<td>Shop Towels</td>
<td>014.5</td>
<td>098</td>
<td>022</td>
<td>0000</td>
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<tr>
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<td>09:32:38</td>
<td>Shop Towels</td>
<td>013.1</td>
<td>090</td>
<td>023</td>
<td>0000</td>
</tr>
</tbody>
</table>
```

**GRAPH**

This SCADA selection uses the files created by the Record/Playback dialog. The entire file is displayed at once, from start to end, in a graph.
This graph has all the features of the other graphs within PulseNet, such as printing, exporting, customization, etc. Since this is a “real-time” graph, however, extra controls have been added for playback, and a movable cursor has been added. To make the cursor appear, you can simply click one of the transport buttons, such as “Play”. Also, you may click the mouse on any data point. You will know when the mouse is over a data point, as the mouse pointer changes from an arrow to a hand.

By clicking the mouse and moving the graph’s cursor in this manner, any recorded point in time may be displayed. When the cursor moves, the LCD and LED readouts below the chart update to display their state at that moment in time.

In addition, a small display in the upper left-hand corner of the graph shows the current mouse pointer’s value within the graph anytime the mouse is moved.

The easiest way to play back a file is to load it with the “Browse” button, then click the “Play” or “Fast Forward” button to begin playback. The Play button will playback the file in real time (an hour’s worth of recording will playback for an hour). The Fast Forward button will speed up the playback by a factor of ten (an hour-long recording will take six minutes to play).
Even during playback, the graph cursor may be repositioned by just clicking the mouse on a data point. This allows the user to skip over parts of the recording, or step backwards to replay a section.
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OVERVIEW

This menu contains selections to change the current user, enable security features, toggle the language and metric settings, update the PulseNet program, view the status of the hardlock, select the printer font, browse and edit the R/S/R database, and backup data on the machine controller’s memory card.

CHANGE USER

If security is enabled for the program (see next section), this menu selection allows the logging in of a different user without having to exit the program.

SECURITY

To better regulate system usage and privileges, PulseNet offers the option of enabling security.
When enabled, users must log into PulseNet with a unique name and password. Once in, a number of options become active for the individual user, including disabled menu selections, language preference, and even keypad deactivation during Display Machine Status dialogs.

The security screen can only be brought up by the manager with a specific password. Managers interested in enabling security should contact Softrol for specific instructions.

All users are listed in the "Users" list box. The menu selections which are enabled for the currently selected user are checked. The user’s name, language, and password appear in the lower left corner, along with the keypad and editor status.

Changing settings for an existing user is easy. To disable any menu selection, merely click to uncheck it. You may use the "All/None" check box for bulk changes or to get to a good starting point. To change the language, use the drop-downlist box, and select "ENG" for English, "ESP" for Español (Spanish), and “FRA” for Français (French).

Type in a new password if desired in the "Password" text box. Uncheck the “Editor - full access” box if you wish to restrict the user to only formula viewing and printing in the editor.

The “Low Security Level” check box is unique. When checked, all menu selection disabling is overridden with settings that allow uploading of data, viewing and printing of formulas and reports, and machine status display. No Read/Save/Reset’s, downloading of data, or any setup or configuration changes are allowed.

In the “Keypad enabled” list box, check only those groups for which the user will be allowed access to the keypad during Graphic Panel or Monitor displays.

When all options are set, click on the "Save User" button.

Removing users is just as easy - simply highlight the desired user and click on the "Delete User" button. The user name "MANAGER", however, cannot be deleted.

To add a new user, replace the name of the current user in the "User" text box with a new unique name. Next, set up all the options as desired and click the "Save User" button. The new user will be added to the “Users” list box.

The "rule of thumb" for the "Save User" button is this - if the user name in the "User" text box exists, his settings are changed. If the user in the text box does not exist, he is added with the settings currently selected.

Security may be enabled or disabled at any time without disturbing the user list or anyone's options. If security is not enabled, PulseNet uses the MANAGER's settings.

NOTE

If you disable a good number of menu selections for a user, make sure he has a path to the
enabled ones. In other words, if only one selection in a submenu is enabled, the user still needs access to the submenu itself. Remember, disabling any submenu (such as "Group Totals" or "Display Machine Status") will prevent access to all selections in the submenu itself.

HARDLOCK

This selection is mainly a debugging tool for Softrol personnel. It will display information concerning the hardlock, or SSI key. If a customer gets a “SSI key not found!” error and suspects a bad hardlock, we can diagnose the problem over the phone via this dialog.

BAR CODE

This selection works like the bar code configuration associated with Ticket Printing in the Tunnel Display dialog. It is merely placed in the utility menu to allow the user to experiment with and print barcodes.

EVENT LOG
This dialog displays very useful recorded information. The main uses for this selection are to help track down why automatic Read/Save/Reset’s did not occur or were incorrect, to monitor formula changes and their uploading and downloading, and calibrations up/downloading.

On the left is a Program Log, which holds information on the last fifty times PulseNet was either started or exited. For each entry, the action taken is listed, along with the date, time, and user name. If you find a scheduled R/S/R missing from the Summarize Period dialog, just refer to this log. You can tell from the dates and times the program was entered and exited if it was running at the time of the missing R/S/R. For example, if a scheduled R/S/R fell after an “Out” entry but before the next “In” entry, it means the program was not running when needed.

Helpful hint: if there are two “In” entries in a row, it usually means the computer was abruptly powered off, or a power outage occurred. The time between these two entries should be considered downtime for the computer, during which a Read/Save/Reset was not possible.

Below this is an Aborted R/S/R log. Aborted entries are made if an automatic R/S/R is manually aborted during it’s initial sixty-second countdown, when the Abort button is clicked for an off-line machine, or if all machines are powered off. Next is an Altered R/S/R log. Altered entries are made if the R/S/R database is reset or edited by the user using Scan Period or Edit Totals. Also, if any machines were reset by the “Clear Machine” function, a “Clear” entry is made here, with the date and time the “totals” memory of the machine was cleared. Finally, an Off-line log shows every time a single machine was unavailable for an R/S/R.

Next, at the bottom is a Formula Log. It keeps track of every time a formula is saved or deleted, when a “Restore” is done from a formula backup, every time the formulas are downloaded or uploaded, and all Imports done in the editor.

The Calibration Log keeps track of every time the calibrations are uploaded or downloaded.

The Print button will print any log the user desires, even all at once.

**CHECK RECONS**

The Check Recons dialog will display any network “reconfigurations” that occur on the ArcNet network. The Start button will begin checking for these “recons”, and the Stop button suspends the process. Any pre-configured ArcNet card may be chosen from the Network section, and its recons will be shown in the red display area.
As the user views the number of recons, a few within a substantial time period is normal. A recon is generated whenever a device, such as a washer or computer, joins or leaves the ArcNet network. In the red display area, the left-hand number is the recons generated by the system as a whole, and the right-hand number is the recons created by your own node (the computer itself).

So, if the left number is incrementing at a fast pace, you have a problem on the ArcNet. These problems can include such things as a duplicate ID, intermittent or bad ArcNet card, damaged or loose cable, and even wrong polarity on a newly-installed machine. If the right number is increasing in sync with the left number, it indicates the problem is with the computer you are using. These problems can include a PC ArcNet card that is not terminated, a faulty PC ArcNet card, bad connections, and duplicate ID’s (another computer on the ArcNet may be using the same ID).

To reset the recon number back to zero, click anywhere in the red display area. This does not fix the problem, just resets the number display. The Exit button will quit the dialog.

**DISPLAY MACHINE FIRMWARE**

This specialized dialog allows the user to check the firmware versions flashed onto all the machines. Just click the Start button to poll all the machines.

<table>
<thead>
<tr>
<th>Group</th>
<th>Machine</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AMD G c. 07-10-2008 Softrol, Inc. CPINT360 Rev. CPINT360 V 1.0 R 1.0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>AMD G c. 03-19-2010 Softrol, Inc. CPINT360 Rev. CPINT360 V 1.0 R 1.0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>AMD G c. 05-06-2010 Softrol, Inc. CATINT2 Rev. CVFD VER 2.0 REV VIP</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>AMD G c. 03-11-2010 Softrol, Inc. CATINT2 Rev. CVFD VER 2.0 REV VIP</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Off-line</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Off-line</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Off-line</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Off-line</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Off-line</td>
<td></td>
</tr>
</tbody>
</table>

This is helpful if a certain feature on the controller or in PulseNet doesn’t seem to work. The current firmware versions can be checked, and Softrol personnel can tell if the firmware on the machine or interface supports the feature.

**LANGUAGE & METRIC SYSTEM**

These selections are placed here for the convenience of the user. They will toggle the language and metric settings without affecting the master settings in the “System Defaults” dialog. When
the metric system is active, a check-mark appears beside the selection in the menu itself.

**PRINTER FONT**

PulseNet makes every effort to automatically select the proper font when printing reports. If the desired font is missing from your computer, or other factors cause improper font selection, the font may be chosen here. Do not experiment with different printer fonts. The desired Courier New font at 12 point size is perfect for all reports. Other fonts may overrun the page or give distorted printouts.

**EDIT TOTALS**

This selection is also a debugging tool, and should be used with caution. It allows the user to edit and permanently change totals-type data stored on the computer.

Before the dialog appears, you will be asked “Group”, “Machine”, or “Database”. “Machine” will display data contained within the machine folder, “Group” will display data in the group folder, and “Database” will show totals data from the Read/Save/Reset database. The data you look at is the exact same data used in the various totals-type reports (Formula Totals, Chemical Totals, Plant Efficiency, etc.).

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If Database mode was chosen, you will see the familiar Starting/Ending Dates dialog. Choose the date/time range you want to look at, then click “OK”.

The list box at the top will present your choices for viewing. Highlight the desired data, then click the “Read” button. Highlighting an entry in the lower data box allows you to click the “Edit” button and change the data.

If in Database mode, an extra Print button appears beside the “record” list box, and a Scan, Reset, and Filter Data button also appear beside the “data” list box. The record Print button prints all records you have chosen. The Scan button will scan all records for a number greater than a user-input value and display the results in the data list box. Reset works similarly, but allows all findings to be replaced with a user-specified value. With Reset, you can choose which records to include in this substitution. The Filter Data button allows editing the filter data associated with the highlighted record.

The “Save”, “Print”, and “Exit” buttons work as they do throughout PulseNet.

**XFER**

This utility has many uses, including backing up your machine controller’s entire memory card to the computer. It derives its name from the fact that a common engineering abbreviation for the word “transfer” is an X. So Xfer really means Transfer, and this dialog is actually a duplicate of our TransX product (minus the language and port selection that is already done for you in the main program).
The currently selected group and machine are displayed at the top of the dialog, and they may be changed by the buttons at the bottom. The displayed machine number will be the one that data is transferred from (or to).

The “Start” and “End” text boxes are for the register numbers, and will be filled in automatically according to the type of data you are transferring. It is recommended that you not change these numbers. No numbers are displayed here if you are transferring all data.

The “Registers” list box lists all available choices for data transfer. The “*** ALL DATA ***” selection will transfer the entire memory card, plus the vocabularies contained on the REM5 card in the controller. They will be placed in files named “bank.0”, “bank.1”, “bank.2”, “bank.3”, and “rvocab.dat”. The location of the files depends on the current drive and folder chosen with the drive and folder list boxes. There are buttons to the right of these list boxes which allow you to create and delete folders in which to place these files. Since the file names never change, you need to place each machine’s files in a separate folder to prevent overwriting another machine’s files.

For all other register selections, you will be prompted for a location and file name for the data. Make sure you create any needed folders before clicking the “Upload” button. These remaining register choices will enable a box where you can choose “Machine” or “Folder” as the source. “Machine” reads/writes to the actual machine controller, and “Folder” reads/writes to the machine folder on the computer. The Folder option would allow such things as taking just the password histories already uploaded to the computer, putting them in a file, and placing them into another machine’s folder on the computer. This has limited use for customers, but is used in-house for program testing.

The “Backup” and “Restore” buttons in the “Formulas” box are exact duplicates of these same selections in the formula editor.

Here is a quick reference of the controls available in this dialog:

Start - the first register number being transferred.

End - the last register number being transferred.

Bank - the bank file number being accessed.

Upload - when the “Machine” option is chosen, transfers data from the controller to the computer. For the “Folder” option, data is read from the machine folder on the computer.

Download - when the “Machine” option is chosen, transfers data from the computer to the machine controller. For the “Folder” option, data is written to the machine folder on the computer.

Create Folder - creates a new folder beneath the one highlighted in the folder list box.
Delete Folder - deletes the highlighted folder in the folder list box.

Exit - exits the dialog and returns to the Main Menu.

Registers - lists all available data that can be transferred. The “*** ALL DATA ***” selection includes all other choices listed in the box.

Backup - creates a formula backup for the currently selected group.

Restore - brings back formula data from a previously-created backup, and places it in the currently selected group.

Change Group ID - changes the currently selected group.

Change Machine ID - changes the currently selected machine.

DATA RECORD DISPLAY

This selection displays the Date/Time, Customer, Item, Lot, and the Weight for all washers. It is handy to see what is in each washer on an automated system.

DATA RECORD EDITOR

This dialog enables viewing, editing, and printing of the PulseNet Plus data record contained in a washer in an automated plant. It’s functions are self-explanatory.

DATABASE CONVERSION

This utility converts older databases into the newer SQL-compatible format. There is one master database for PulseNet, named PulseNet.mdb. It is compatible with Microsoft Access, and contains tables for all the PulseNet programs. Once an old database has been converted, the user is given the opportunity to delete it.

In the case of the Wet Process program, it is used to convert Item Names, Lot Names, and Customer Names into tables in the SQL database. These names are used in the Tunnel menu for printing tickets for tunnel washers.

ENABLE ALL MENUS

This menu selection will enable all menus for any user, making it useful in emergency situations. However, a password is required before it will enable all the menus. This password may be obtained by contacting Softrol directly.

NOTE

Use this with caution if also running the PulseNet Machine Monitor (PMMM) program. While the menus are all enabled, the PMMM program will pause its polling of machines and display
the “Waiting on ArcNet” message. This is desirable if both programs are sharing one ArcNet card, but is a hindrance if each program has its own dedicated card. The idea is to use this function for a very short period of time, such as briefly checking on a machine’s front panel display.

**RESTORE MENUS**

This menu selection will return the menu structure to its previous state, according to the current logged-in user. It will also release the ArcNet card for the PMMM program to use.
OVERVIEW

The Help menu contains selections to access the User’s Manual, display enhancements and bug fixes made to the program, and display the About Box.

USER’S MANUAL

This selection brings up the User’s Manual in the Acrobat ® Reader. You may also access the manual by pressing the [F1] key. The first time (and the first time only) you select this, you will be asked for the location of the Adobe ® Acrobat ® Reader. Locate the AcroRd32.exe file in the Destination Folder you specified during the Reader’s installation.

ARCFIBER SETUP

For reference, the user can view the proper jumper settings for an ArcFiber card in the BNC (coaxial cable) mode. Also, the Node Switch settings can be viewed for any machine number. The jumper settings will change graphically as you select different Network types. In addition, as a node number is selected in the Node box, the graphic of the switch will reflect the proper settings. See the next page for a picture of this dialog.

PASSWORD CHART

This selection displays a chart showing the access levels of all the passwords.

OTHER DOCUMENTATION

The user may access any additional documentation by choosing this selection. The documentation must be in PDF format, and reside in the “OtherDoc” folder directly underneath the main program folder. An example of this would be Softrol or OEM personnel placing machine schematics in this folder, which are readable by the Adobe Acrobat Reader.
PROGRAM HISTORY

This menu selection will display the enhancements and bug fixes made to the program during its lifetime. It is useful for keeping track of changes as you update the program.

SOFTROL WEB SITE

This selection will display two links (URL’s), in blue underlined text. Clicking on the “Softrol Web Site” link will bring up your Internet browser, and go to the Softrol web page. Clicking “PulseNet Updates” will take you to the FTP site where all currently released PulseNet modules reside. When you get to the FTP site, click on the ReadMe.txt file to see if there is an update available for your program. If so, click on the appropriate file(s) and install per the instructions in the ReadMe file.

ABOUT

This menu selection displays the About Box, which contains the manufacturer, name, and copyright notice of the program. The version number is also listed (as it is in the Main Menu's title stripe).
ADB - the ASCII Database, which is a translation of Softrol's Read/Save/Reset database in readable form. It is in the “CSV” format.

ARC-Fiber - the card in the Softrol card cage that enables communication between the controller and the computer. It has a round twist-off BNC connector on it’s edge, plus a plug for twisted-pair connections and a fiber-optic port.

ArcNet - a network made up of active and/or passive hubs, connecting the computer to all controllers in the system via coaxial cable.

ArcRam - a card in the Softrol card cage that combines the functions of an ARC-Fiber card and a 128K Memory Card.

ASCII - the American Standard for Computer Information Interchange. It usually refers to the standard character set itself, and denotes that a file containing these characters is a "text" file, which can be displayed on the screen or sent to the printer.

balloon - text inside a small rectangle which pops up near a screen element to describe it's function. Pausing the mouse over toolbuttons causes them to appear.

button - a raised, rectangular box containing text which, when clicked on with the mouse, performs a specific task.

calibration data - data resident on the machine controller (and stored on the PC) which is used to insure accurate machine functions such as water levels and chemical injection.

check box - a small square, labeled with descriptive text, which controls a specific function. When a check-mark appears in the box, the function is enabled.

chemical - usually refers to one of the fifty chemicals that can be assigned to a group for use in formulas.

chemical assignment - the relationship between chemicals and supplies. Each chemical in a
group assignment may be made up of one or more supplies.

**classification** - a user-definable type of laundry, such as "Hospital Linen" or "Blue Denim". Formulas may be assigned a classification, to aid in plant production reports.

**click** - to move the mouse cursor (the arrow) over an object, and quickly press and release the left mouse button.

**clipboard** - a standard Windows temporary storage place for text, pictures, etc.

**component** - one of the supplies that made up a chemical.

**configuration** - usually refers to the machine "setup", accessible on the controller or through PulseNet.

**controller type** - manufacturer and model of the machine controller.

**conversion factor** - the number which, when multiplied by the Meter Units, equals one unit of the Resource Type.

**count** - the number of individual pieces of laundry, measured in Units.

**current group** - the group upon which PulseNet Group Menu dialogs will interact. It is displayed on the Main Menu in the Info Box.

**current machine** - the machine upon which PulseNet Machine Menu dialogs will interact. It is displayed on the Main Menu in the Info Box.

**cut** - to remove from the editor and hold in the clipboard. Typically, it is retrieved and used elsewhere at a later time.

**CWT** - hundred weight, which equals 100 pounds (or kilograms).

**daisy chain** - the connection method whereby machines are cabled one after the other on a single line. Machines are connected in parallel.

**database** - a computer file, residing on the hard disk, which contains information arranged in an orderly fashion for fast retrieval.

**dialog** - a window brought up by choosing a menu selection which contains list boxes, buttons, etc. to perform a specific task.

**double-click** - to move the mouse cursor (the arrow) over an object, and quickly press and release the left mouse button twice.

**download** - to transfer data from the computer to the machine controller.
efficiency - a measure of expected results versus actual results, expressed in a percentage. The higher the percentage, the better.

empirical run time - a formula run time that is user-definable. It overrides the Estimated Run Time in reporting.

ending date - the last date/time entry used in a report. It's data is included in the results.

estimated run time - the addition of all instructions in a formula that take up time (such as Run Time and Drain Time) and all Standard Times. This gives an estimate of how long the formula takes to run from start to finish.

filter - a feature which discards certain data. In Edit Vocab Files, it discards strange characters. In Summarize Period, it discards undesirable entries in the database.

focus - denotes the active item in a dialog which will respond to keyboard and mouse input. It usually follows the cursor or highlight bar.

collection of instructions for washing a load of laundry from start to finish.

Grid—a special type of list box with horizontal and vertical lines bounding the rows and columns.

group - a set of machines which all use the same formulas. For this reason, they are usually of the same manufacture, capacity, and features.

group folder - a storage place on the computer's hard disk where all group-specific data is stored. They are named "Gx", where x is the group number.

group specific - data which pertains to a group of machines, such as formula data.

hard disk - the main storage device in a personal computer. All software and data files are stored here. It is assigned a letter for reference, such as C. The path "C:\PWPM\HOME.SIT\G1" means machine #1 folder in the home site of the PWPM folder on the C drive.

highlight bar - the colored line in a list box which denotes the currently selected item. The color of this line will depend on the color scheme Windows is using at the time.

history - a listing of events that have occurred on the controller in the past.
**import** - to bring data from somewhere else on the computer (usually another directory) and place it in your current work area.

**Info Box** - the gray box in the center of the screen when the Main Menu is displayed. It contains informative data as well as the main toolbar.

**instruction** - a single line in the formula editor, which tells the machine to perform a specific task.

**interval** - the period of time between maintenance watchdogs. For example, if you change the oil every 100 hours, then 100 is the interval.

**LAN card** - the printed circuit board in the Softrol card cage that enables RS-485 communication between the machine and the computer. It usually has a bright green connector on it's edge. It is used on the older RS-485 networking scheme.

**list box** - a rectangular box containing lines of text in a column. These lines can be scrolled through and selected by the user.

**machine folder** - a storage place on the computer's hard disk where all machine-specific data is stored. They are named "Mx", where x is the machine number.

**machine-specific** - data which pertains to only one machine, such as configuration data.

**Main Menu** - the "home base" of PulseNet, it is the large window which first appears after entering the program. It contains menus to perform all the various functions, as well as the Info Box.

**Main Screen** - the "home base" of the formula editor, it is the window which first appears after selecting the Edit Formulas dialog from the Main Menu.

**maintenance message** - a text message that, when displayed on the controller, informs maintenance personnel to perform specific preventative maintenance procedures.

**menu** - a vertical listing of selections. Each selection usually brings up a dialog to perform the desired task.

**menu bar** - a horizontal listing of menus. Clicking on an item will drop down the corresponding menu.

**network** - the collective sum of the computer, machines, and the cable and equipment that connects them all together.

**off-line** - refers to a machine that is turned off, or otherwise unavailable.

**on-line** - refers to a machine that is turned on and ready to communicate with PulseNet.
**operation** - a series of frequently used instructions, stored together as a group for easy insertion into a formula.

**operator prompt** - a text message which relates information to the machine operator. They are frequently inserted into formulas to inform the operator when to add chemicals.

**option** - a circle, labeled with text, that selects a specific choice. When a dot appears in the circle, the option is selected.

**Opto card** - the expansion card located in the computer which communicates with the LAN cards in the machine controllers. It is used for RS-485 communications only.

**paste** - to take data held in the clipboard and place it at the current location in a formula or operation.

**path** - the drive and list of directories which tell the computer where a specific file can be found. For instance, in C:\PWPM\HOME.SIT\G2\RVOCABS.DAT, the file RVOCABS.DAT (the vocabularies) for group #2 can be found in the path C:\PWPM\HOME.SIT\G2.

**period** - the dates and times over which data has been collected and stored.

**PC** - Personal Computer, the computer on which PulseNet is installed.

**port** - a connector, usually on the back of the computer, for the purpose of communication with another device. Where your printer and the cable for PulseNet plug into your PC are examples of ports.

**production** - the amount of laundry processed over a specific period. It can be measured in pounds (or kilograms) or units.

**purge** - to delete unused entries from a database.

**ratiometric** - a method of chemical measurement based on the load weight of the washer. Adding 10% of Bleach in the formula editor is an example of adding chemicals ratiometrically. If 100 pounds of laundry were being washed, 10 pounds of bleach would be added.

**record** - an entry in a database representing a single sampling of data (usually a specific date and time for one machine).

**resource type** - one of three major categories of energy. All utilities are boiled down to fit in one of the categories (kWH, gallon, and BTU).

**R/S/R** - Read/Save/Reset, the process of reading accumulated totals from all machines, saving this data in the database, and resetting the machine accumulators to zero.

**run sheet** - an operator's "road map" to his intervention during a formula run. It lists all
chemical additions as well as all operator prompts.

**security** - a system whereby users must logon to PulseNet as a specific user name. Each user must input his own password before operating the program.

**selection** - a choice in a menu that brings up a dialog. Edit Formulas is an example of a selection within the Group menu.

**shortcut key** - a quick way to make a menu selection using only a single keystroke. No mouse activity or menu searching is required.

**signal** - the alarm which sounds on the machine controller. Its presence is detected in the Display Machine Status selections.

**site** - a plant location. A site contains all data pertaining to that particular location, separate from other sites. PulseNet can maintain data from many different sites within one program.

**sleep** - to freeze the clock on a controller, so no time accumulates.

**standard times** - a set of average times for various machine functions. It is used in computing estimated run times for formulas.

**starting date** - the date at which data collection begins in a Summarize Period function. This date's data is not included in the results. For a Purge Database, however, this data is included (removed from the database).

**step** - an area of a formula which consumes time, such as a Run Time instruction. When a step's time has elapsed, all conditions (such as water fills) specified in the formula are canceled.

**submenu** - a mini-menu which pops up beside a menu selection, offering more than the usual one choice.

**summarize** - to take data for a specific period, add together all the figures, and use it in reporting.

**supply** - an inventoried supply chemical. There can be 100 supplies, and these supplies are used to define the chemicals used in each group.

**SQL** - “Structured Query Language”. An English-like language permitting statements to be constructed to perform functions on a database such as data fetching.

**text box** - a rectangle in a dialog which accepts user input from the keyboard.

**thermo water** - refers to a formula instruction that brings the wash bath to a certain temperature.
toolbar - a horizontal row of toolbuttons.

toolbutton - a small square button with an icon (picture) inside. When clicked, it is a shortcut to a menu selection.

totals - accumulated data from a machine controller. Formula Totals are an example.

upload - to transfer data from a machine controller to the computer.

vocabulary - user-definable text, displayed by the controller at specific times. Formula names and maintenance messages are examples of vocabularies.

wake - to restart the clock on a machine controller, so time is once again accumulated.

washroom - the area of a plant where the washers and dryers are located and operated.

watchdog - a machine "alarm" that is tripped by exceeding a user-definable value, or by a preset condition. Maintenance messages and Clutch Overloads are examples of watchdogs.

weight - a reporting method using the load weight of the washer. Count is it's counterpart.

yield - the normal capacity of a formula, measured in pounds (or kilograms) and units.
In a typical plant network, RS-485 cable is used to connect the computer to all machines, and must be wired consistently throughout its entire length. Although you can use any color scheme, we recommend the following:

**WARNING**

The shields on all cables must be connected or communications may not be possible. The shield should be connected in the DB-9 connector pin 3. When the cable gets to the first machine in the daisy-chain, the shield must be connected to the cable which exits this machine and goes on to the next one. The two shields are usually twisted together and taped to the cables using electrician's tape. This insulating tape is used to prevent contact with any metallic objects. On the last machine in line, the shield should be taped up, not cut off, as you may want to add more machines later. Also don’t forget to install two terminating jumpers on the last LAN card. The pins to be jumped are located below the bright green connector, and labeled "H1" and "H2". Only the last card in the daisy-chain should have these jumpers installed.
Although highly unusual, it is possible for most PulseNet modules to communicate via RS-232. Usually, only TransX uses this method (in fact, it is the only way TransX can communicate to a machine). The Opto card is not needed in the computer, just a standard COM port which most computers already have. However, you can only talk to one machine at a time - the machines are not cabled together and there is no network. The usual scenario would be to physically carry a laptop PC to a machine and plug directly into the communications card, one machine at a time. The pinouts for this type of cable are as follows:

LAN card

![LAN card diagram]

RS-232 CABLE for LAN-1A

Cable Part # CBL-PC/LAN-9FT

REM-K4A card

![REM-K4A card diagram]

RS-232 CABLE for REM-K4A

Cable Part # CBL-PC/K4-9FT

Corresponding Machine Setups

- Full Baud Rate=Yes
- Multidrop Net=No

(The LAN Member ID # must be from 1 to 255)
TWISTED-PAIR CABLE for REM-K4A

Cable Part #
CBL-PC-ARCFLIBER
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APPENDIX B
ASCII DATABASE
(CSV FILE FORMAT)

OVERVIEW

The ASCII Database is the programmer's window into the PulseNet system. It allows an in-house programmer or an outside consultant to custom design reports for the end user. The ADB consists of ASCII characters, formatted in fields for easy retrieval by a third-party program. The file is also directly accessible by many spreadsheet and database programs.

DATABASE FORMAT

The database is actually a “CSV” or “Comma Separated Value” file. It consists of lines of text divided into fields. Each field is delimited by commas and enclosed within double quotation marks. Each line consists of data for one formula from one machine. There are two files which make up the ADB - one for formula totals, and one for chemical totals. The chemical file will be suffixed with “-chems”. The layout of the formula file lines are as follows:

Field #1 - Group Number
Field #2 - Machine Number
Field #3 - Formula Name
Field #4 - Classification
Field #5 - Number of Runs
Field #6 - Standard Run Time
Field #7 - Actual Average Run Time
Field #8 - Hot Water Usage
Field #9 - Cold Water Usage
Field #10 - 3rd Water Usage
Field #11 - 4th Water Usage
Field #12 - Total Water Usage
Field #13 - Number of Watchdogs
Field #14 - Weight
Field #15 - Count
Field #16 - Satisfy Time
Field #17 - Water Fill Time
Field #18 - Steam Time
Field #19 - Cooldown Time
Field #20 - Auto Chem Time
Field #21 - Supply Dispenser Time
Field #22 - Signal Time
Field #23 - Pause Time
Field #24 - Watchdog Time

All waters are measured in gallons, and the weight in pounds. All times are displayed as up to ten digits representing minutes, followed by the seconds (two digits). A time example would be “234746:34”, which means 234,746 minutes and 34 seconds.

Formula 1-128 correspond to Formula #1 thru Formula #128. Formula #129 is Loads, Formula #130 is Unloads, and Formula #131 is Canceled Loads.

The layout of the chemical file lines are as follows:

Field #1 - Group Number
Field #2 - Machine Number
Field #3 - Chemical Name
Field #4 - Usage
APPENDIX C
USING THE CHARTS

OVERVIEW

Every report in PulseNet has the ability to display charts containing the dialog’s information. These charts may be accessed by clicking the chart button, which is square with a picture of a bar chart on it. Sometimes these buttons will not be visible until you sort the data. An example of this is the Formula History dialog. A chart button will not appear until you click the “Sort by formula” check box.

Dialogs that contain multiple data will prompt you for which data to chart. The chart will first appear as a “bar chart”, but can be switched to a “pie chart” by clicking the “Pie” option. The “OK” button will remove the chart and return you to the dialog.

These charts are highly customizable, can be printed or exported, and allow for generous user interaction. Clicking the right mouse button in the chart area will cause the user menu to pop up. This popup menu will bring up various dialogs, including on-line help.

CHANGING THE CHART TYPE

You can change the default vertical bar graph to a horizontal bar graph using the popup menu. Just select the “Horizontal Bar” selection from the “Plotting Methods” submenu. Also, you can change to a pie chart by clicking the “Pie” option in the “Type” frame below the chart.

CHANGING THE STYLE OF DISPLAYED DATA

You may display bars or pie slices with no background, a shadow, or a three-dimensional effect by clicking the appropriate choice in the “Style” frame.

MAXIMIZING (ENLARGING) THE CHART

You can fill your screen with the chart using the “Maximize” button. To return to normal view, hit the [Esc] key or click on the title stripe at the top of the screen.
PRINTING A CHART

Click on the “Print” button. This will bring up a familiar-looking printer selection and setup dialog. When ready, click the “OK” button to send the chart to the desired printer. The chart will fill the page by default.

ZOOMING

You may zoom in (magnify) a section of a chart by using your mouse. To do this, press and hold down the [Shift] key. Now, click and hold down the left mouse button. With the key and button held down, drag the mouse cursor and a rectangle will appear. Keep moving the mouse and position that rectangle over the section you wish to magnify. Release the mouse button, then the [Shift] key, and the area enclosed by the rectangle will fill the entire chart space. To return to the normal view, either hit the [Z] key on your keyboard, or you can use the popup menu’s “Unzoom” selection.

PLACING A PICTURE OF A CHART IN A DOCUMENT

For powerful reports, letters, etc., you can display a chart in your word processing or other document. With the popup menu, choose the “Export Dialog” selection, click on the “Export” button, and the chart picture will be sent to the Windows clipboard. Then, for example, within your word processor, choose the “Paste” or “Paste Special” selection of the “Edit” menu to insert the chart in your document.

PLACING CHART DATA IN A SPREADSHEET OR DATABASE

With the popup menu, choose the “Export Dialog” selection, then choose the “Text/Data Only” option in the “Export” frame. Next, click on the “Export” button, select and set the various options, and click on the “Export” button to send the data to the Windows clipboard. Then, for example, within your spreadsheet, choose the “Paste” or “Paste Special” selection of the “Edit” menu to insert the data in the cells.

*Hint:* if you are using Microsoft Excel for Windows, all those settings in the export dialog are fine just the way they are...you don’t have to change a thing, just click “Export”.

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OVERVIEW

Reports, charts, formulas, and backups may be E-mailed by clicking on the E-mail button contained in the dialog. Very little setup is required, and only needs to be done once. The E-mail dialog will remember the major settings from the last time you used E-mail.

THE E-MAIL DIALOG

The dialog used for sending mail is amazingly simple. It comes up automatically whenever you click on the E-mail button.
The only real setup you need to do is specify your ISP (Internet Service Provider). Most companies these days have their own web site, so this is no problem. A common example of an ISP would be mail.CompanyName.com, where “CompanyName” is derived from or your actual company name. Place the name of your ISP in the text box labeled “SMTP Server”. If you are unsure, ask your System Administrator or Web Services Manager for your SMTP server name.

Unfortunately, most on-line services, such as AOL and MSN, do not directly provide SMTP (Simple Mail Transfer Protocol) connections. In other words, simply having America Online installed on your computer will not enable you to send E-mail with PulseNet. However, if you do have an ISP at work but are away from the office, you can log onto an on-line service, then use PulseNet’s E-mail as normal.

In the Address frame are “To”, “CC”, and “From” fields. The “To” and “CC” fields should contain the complete E-mail address of the recipient. Multiple recipients may be specified if separated by commas. The “From” field, which will probably stay the same most of the time, must contain your complete E-mail address, or replying to your mail may not be possible. This means your entire E-mail name, such as “JoeBlow@WidgetMfg.com”. Customers with an alias that is used on a company mail server, such as your first name or initials, cannot be used here. All the addresses will be remembered the next time you use the E-mail feature.

For your convenience, an address book is provided. Click the “Address Book” button at the end of the “To” or “CC” text box, and the address book opens.

![Address Book](image)

To select a pre-existing entry, merely highlight it with the mouse and click “Select”. The address book will disappear and the selected address will be placed in the appropriate box.

Adding, deleting, and editing names and their associated addresses is simple and available by clicking on the desired button. There can only be a maximum of 32 addresses stored.

The attachment frame controls which files, if any, you wish to send along with your mail.
Choices not applicable to the current report or task are disabled ("grayed-out").

Adobe Acrobat Reader Files (PDF) are readable with the Adobe Acrobat Reader. This reader should already be installed on any computer running PulseNet, as it is needed to access the User’s Manual. The reader offers many features, including printing. If you are sending E-mail to someone who does not have the reader, it is available free at www.Adobe.com. You may view the PDF file before it is sent by clicking the “View PDF” button.

Comma Separated Value Files (CSV) are readable by most spreadsheet and database programs, such as Microsoft Excel and Access. In Excel, you may have to adjust several of the column widths so all the text in a cell is displayed.

The “Send” button will transmit your E-mail, including selected attachments, while the “Cancel” button exits the dialog without sending anything.
OVERVIEW

This section will deal with certain things to keep in mind when working with machine controllers that provide 512 different formulas, rather than the standard 128. It will also explain any different procedures that need to be followed.

The formulas are grouped together in four “blocks” of 128 formulas each. Block #1 consists of the usual formulas 1 - 128, while Block #2 contains formulas 129 - 256, and so on. In addition, there are 256 available operations, also grouped into blocks. A formula may only access an operation within its own block. The following chart shows how this works.

<table>
<thead>
<tr>
<th>Block</th>
<th>Formulas</th>
<th>Available Operations</th>
<th>Non-namable Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 - 128</td>
<td>1 - 64</td>
<td>33 - 64</td>
</tr>
<tr>
<td>2</td>
<td>129 - 256</td>
<td>65 - 128</td>
<td>97 - 128</td>
</tr>
<tr>
<td>3</td>
<td>257 - 384</td>
<td>129 - 192</td>
<td>161 - 192</td>
</tr>
<tr>
<td>4</td>
<td>385 - 512</td>
<td>193 - 256</td>
<td>225 - 256</td>
</tr>
</tbody>
</table>

The 512 formula controller will only allow the user to edit formulas 1 - 128. The other formulas (and their associated operations) must be edited with PulseNet.

Several things are shared among all formula blocks. They include chemicals, chemical assay adjustments, prompt vocabs, and classification names.

For versatility, other things are individual to each block of formulas. These are operations, and formula backups.

EDIT VOCAB FILES

For Block #1, all vocabularies are available for editing. However, all blocks share the same vocabs for Prompts, Maintenance Messages, Chemical Names, and Chemical Units. These
vocabs are disabled (or “grayed-out”) when editing blocks 2 through 4.

These four vocabs do not automatically appear in blocks 2 - 4 upon creation of a 512-formula group. They are placed there when saving an editing session. Here is a common scenario that explains how to get these vocabs in all blocks:

Let’s say you already have a Group #3, which has just been converted from 128-formula controllers to the 512-formula version. You already have all the vocabs for Block #1. You will assign the new Formula Names and Operation Names as you build formulas 129 - 512, but you first need to get the other four vocabs into these upper blocks. To do this, do a simple edit on a Formula Name in Block #1, such as removing the last letter of the name. Now save the vocabs. This saving of vocabs has now placed the shared vocabs in all blocks. Lastly, edit the formula name again to replace the last letter, and save again. These upper block vocabs must now be downloaded to the machine(s), either by the Download button, or during a Group Formula Update.

One more thing - when using the Import function, keep in mind that you will be importing all blocks of vocabs, not just the current block you are working with.

**EDITOR**

Due to common and individual data associated with formula blocks, there are a few things to remember.

Formula backups are done on a per-block basis, for versatility and to maintain backward-compatibility. That means a full 512-formula backup is made up of four individual files. For group #1, the default locations of the backups are the G1, H1, I1, and J1 folders. The versatility comes into play by the ability to restore any block’s formulas into the current block.

When using the Backup selection, all blocks are backed up at once. This causes the backup files to be placed in the “G”, “H”, “I”, and “J” folders of the current site, no matter where you specify they be placed. This is done for speed and consistency. In the case of specifying a floppy disk as the destination, the aforementioned folders are automatically created on the floppy before the files are placed there.

In contrast to this scheme, the Restore selection only restores one block of formulas at a time. This maintains backward compatibility and gives the user more options.

The machine controller stores all 512 formulas and 256 operations in it’s “permanent” memory. However, it can only access 128 formulas and 64 operations at a time, along with their associated vocabularies. The controller swaps the four formula blocks in and out of permanent memory into “working” memory, to be able to access all 512 formulas. Because of this, when using the Insert Formula command, you can only insert one from the current block. To do otherwise would cause an operation’s name in the inserted formula to be incorrect. However, you may use Insert Operation to insert an operation from any block into the current operation. This is because only the individual instructions are inserted, not the operation’s name.
If misnamed operations aren’t a concern, or only 64 operations are needed and are therefore the same in all blocks, you may use the versatility of the Import command. It lets the user get around the above restrictions by allowing the importing of any single formula or operation from any block. Moreover, entire formula or operation sets can be imported by the block. For instance, you can import formulas 129 - 256 in group #2 into formula 1 - 128 of group #1.

**SCAN PERIOD**

When using the Repair command, be sure to repair Block #1 first. This is because repairing any Block #1 will reset the formula and chemical totals before adding any user-input runs. Repairing blocks 2 through 4 will not reset these totals, it will simply add to them.

In case the user only needs to input formulas ran in the upper blocks, Block #1 should still be repaired (or reset) first. This will clear out any totals for formulas 1 - 128.
First, click the “Start” button in Windows’ lower left-hand corner, and highlight “Settings”. From the Settings menu, select “Control Panel”. In the Control Panel window, double-click on the “System” icon. When the System dialog appears, click on the “Hardware” tab, then the “Device Manager” button.
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