Davison Software
Davison Systems, LLC

Phone 707-447-3227
support@DavisonSoftware.com

PredictMate ®

Predictive Maintenance

Contents

September 23, 2009

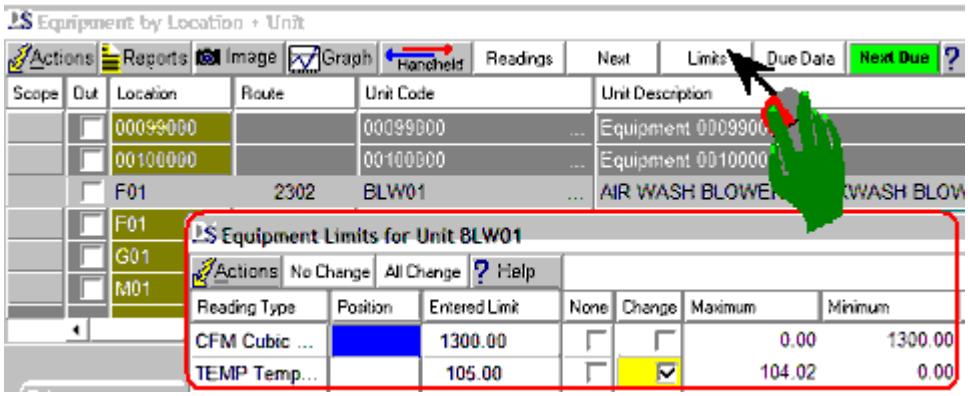
How to Use PredictMate ™

A) Add initial predictive measurements as equipment readings. There are three ways to add readings:

- Manual entry in the Equipment Readings window.
- Enter to handheld (PDA). You can enter new readings to handheld before any scheduling. See Export to Handheld and Update from Handheld
- Import from SCADA. See Staging Tables and Scheduling or import from a Machine Condition Evaluation (MCE).

B) Set PredictMate Alarm Limits. PredictMate will report alarm limits by **one** of the following four methods for each equipment unit, depending on how much information you enter.

1) Let PredictMate set limits from past data. At least six past data points are required.
2) By the type of reading where no other limit exists for the equipment.
3) By a group of equipment, related by components where no specific limit exists.
4) Setting the specific limit for each equipment reading.



C) Continue adding readings when scheduled by PredictMate. Readings from SCADA are excluded from scheduling by PredictMate unless you select otherwise when prompted. Scheduled readings output to either handheld (PDA) or printout.

Scheduled Readings to Handheld

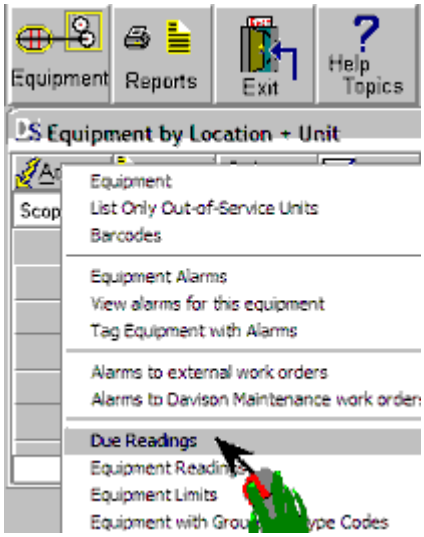
Getting readings with a handheld is simple compared to printouts.
1) If needed, select equipment by tagging equipment records in the “Scope” column. Sort equipment as you want records sorted on the handheld.
2) Press the handheld 

button. Then select “Export to Handheld”. Then HotSync to the handheld.
3) After getting readings with the handheld, HotSync, then select “Update from Handheld”.

Scheduled Readings to Printouts

Run the Due Readings report to get a list of readings. Use this list as you move among equipment. You should print the list in a sort order that allows the most convenient route through the equipment.

1) Sort by Location (or other sort of your choice).
2) Select the “Due Readings” report.



Print the Due Readings report, then take readings at the equipment.

Equipment Readings Due on 12/21/2005 Default interval 28 Days
Sorted by Location + Unit

Unit Route
Location F01 Filter Building
BLW01
AIR WASH BLOWER (BACKWASH BLOWER)
2302

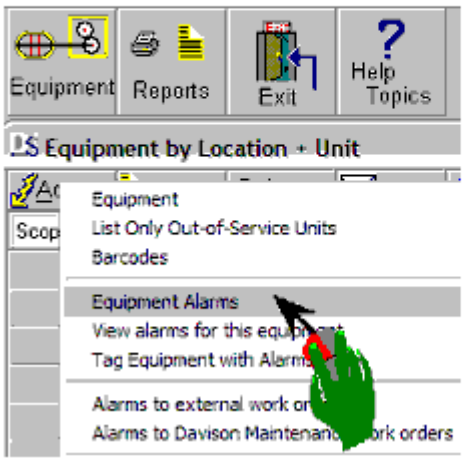
Position	Type	Last reading by (No Personnel ID)	11/16/2005
		New reading by	__/__/____
	Cubic Feet per Minute air flow (Minimum)	1150.00	_____.___
	Temperature	99.50	_____.___
	Hours, Total	5500.00	_____.___
2H	Displacement Vibration	5.10	_____.___
2H	Velocity Vibration	0.44	_____.___

After measuring readings and writing them in the blanks, enter the new readings to PredictMate.

See How to Enter Data.

D) After adding new readings, run the alarm report.

1) Select a sort order and tag equipment records if needed
2) Select the "Equipment Alarms" report.



E) Review alarms for indication of trouble.

Equipment Alarms

Sorted by Location + Unit

Unit Location: F01 — Filter Building — Route: 2302

BLW01 — AIR WASH BLOWER (BACKWASH BLOWER)

Date	Time	Person	Position	Type	Maximum	Minimum	Reading
11/16/2005		(No Personnel ID)		Cubic Feet per Minute air flow (Minimum)		1300.00	1150.00
Forecast Maximum 12/7/2005				Temperature	104.02		99.50
			2H	Displacement Vibration	5.00		5.10
			2H	Velocity Vibration	0.35		0.44

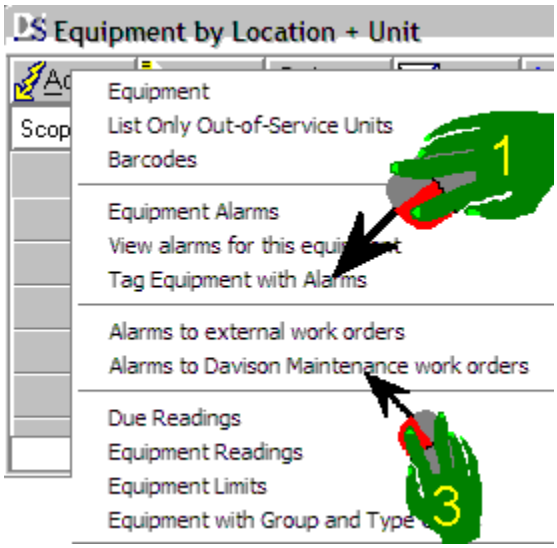
F) You can transfer alarms to work orders in Davison CMMS. See How to Create Work Orders from Alarms

You can export alarms to work orders for another CMMS. See How to Create External Work Orders. Custom options are available to create Predictive work orders in another CMMS.

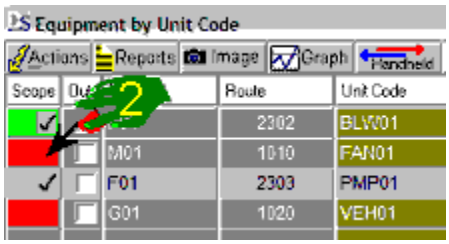
How to Create Work Orders from Alarms in PredictMate ™

To avoid creating too many work orders follow this procedure.

1) From "Equipment", "Reports" select "Tag Equipment with Alarms".



2) Remove the tags for equipment that do NOT require a work order.



3) Select "Reports", then "Alarms to Davison Maintenance work orders". Only the tagged records will create a work order in Davison Maintenance or external work orders.

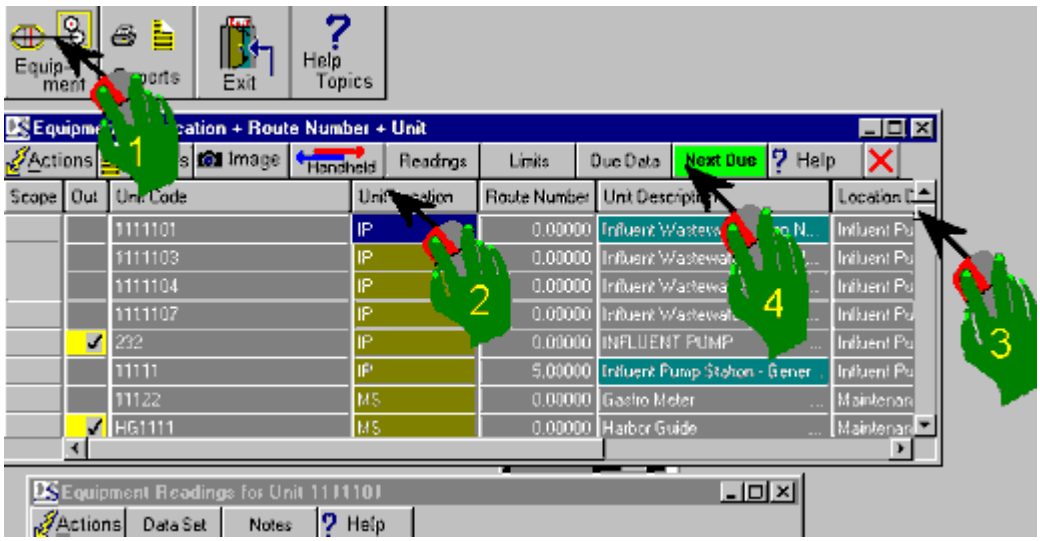
You can also export alarms to external work orders. A text file is created of external work orders for each equipment unit with alarms. Custom formats are available. The standard format is a comma-separated (.CSV) file.

Run commands can be scheduled to add work orders from alarms without review. See External Work Orders. Another run command can print work orders from Davison CMMS when scheduled. See Reports for Work Orders.

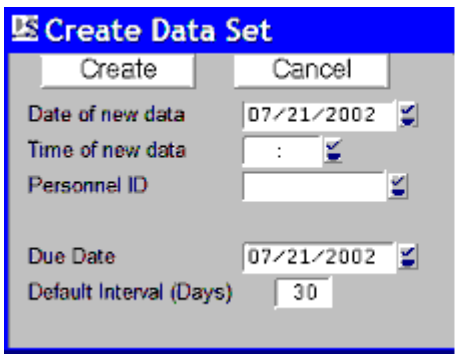
Condition-Directed (CD) tasks, configured in the Preventive Maintenance module, can print for alarms. See Condition-Directed Tasks Setup

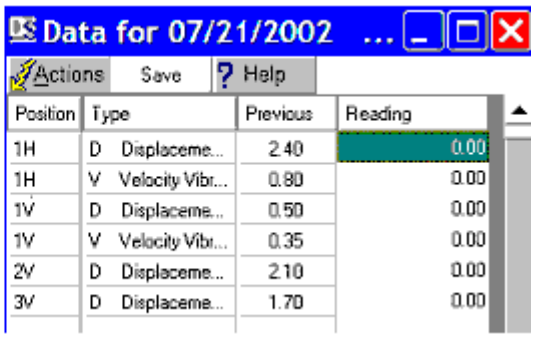
How to Enter Data

1) Open the equipment window.
2) Sort on location or another sort the same as the Due Readings report.
3) Scroll to the first record at the top.
4) Press Next Due



The first time you press Next Due you are prompted for the following information. The Due Date must be the same as the Due Date in the heading of the Due Readings report.





Enter readings then press 

for the next data set to be entered.

You can enter readings to the data set with a new position and type. Press Actions >> Add.

Press "Save" to add the data set to equipment readings.

PredictMate

Predictive Maintenance (PdM) Software for Monitoring Equipment

PredictMate Features

Prevent equipment failure with PredictMate. PredictMate prints alarm reports or work orders according to data from simple measurements. PredictMate operates with basic equipment data from any computerized maintenance management system (CMMS). The PredictMate alarm report can export to work order requests for any CMMS.

PredictMate compares data from measurements to limits or trends in data, warning you of impending equipment failure. You enter data or import data from readings such as vibration, amperage, megohms, or runtime hours. You can add about any type of reading to PredictMate. An alarm report includes equipment with data from readings that exceed a limit or trend toward a limit.

Setting PredictMate Alarm Limits

Use **one** of the following four methods to set alarm limits for each equipment unit:

1. Let PredictMate match limits for a specific group of equipment. You assign the group according to standard components for an equipment unit. You can add limits for more equipment groups as needed.
2. You set the limit for each equipment reading.
3. Let PredictMate statistically set limits from past data.
4. Some reading types have default limits where no specific limit exists for the equipment.

Data Collection Intervals

You set the interval between readings to a fixed interval or PredictMate changes the interval. If data indicates a trend toward equipment failure, the interval between readings becomes shorter and a warning is indicated on the alarm report. The interval between readings becomes longer for equipment that remain stable and within limits. You can override this automatic change of interval for each equipment unit.

SCADA and PredictMate

SCADA (Supervisory Control And Data Acquisition) and PredictMate act together to resolve alarm conditions. See the slide show in PDF format on the CD for PredictMate or at this link: http://www.davisonsoftware.com/downloads/PredictMate_SCADA.pdf.

Getting Started

Build your initial database for PredictMate in this order:

1) Import the following equipment data from another system or enter data manually.
   a) Locations of equipment:
      Location Code
      Description
   b) Personnel Information:
      ID Code
      Name
   c) Unit Information:

Unit Code. - Any unique code is acceptable. If exporting work orders to a CMMS, this code must be identical to the equipment in the CMMS.

Description

Location code from the locations list.

Route Number. An optional numeric order for routing.

Group Code. Units are classified to a group against a list of standard components.

2) Equipment Limits

You enter equipment limits only when default limits do not exist for an equipment unit and specific limits for an equipment unit are necessary.

3) Enter predictive measurements (readings) for equipment or import data from an equipment survey (or Machine Condition Evaulation).

Glossary of Terms

- Equipment Unit

  Equipment units have component parts. For example an exhaust fan could have a motor, belt drive, and fan as component parts. These component parts classify the equipment unit as an exhaust fan with characterists different from an exhaust fan that has the fan mounted directly on the motor shaft.

- Standard Components

  Component parts that classify an equipment unit are: Driver, Intermediate machine , Driven machine, and Product. Also the RPM and horsepower (HP) may be used to specify limits. A database of standard components is provided.

- Equipment Group

  Equipment groups are defined by standard components. More than one equipment unit may have the same equipment group code.

- Equipment Location

  A location is often a building or an area within a facility. A location could also be a lift station, or a large tank with equipment.

- Route

  The order in which you take predictive maintenance readings. The route is sorted within each location or can be sorted regardless of location.

- Readings

  Values of measurements for an equipment, recorded from a meter or imported from a data logger. In PredictMate all data from readings are entered by equipment unit, not separated to equipment components.

- Reading Type

  Examples of reading type are vibration displacement and velocity, amperage, run-time hours, and megohms.

  These types are reserved. Only these codes for the reading types described here:

  "D" and "V" for Displacement and velocity vibration

  "A" for amperage

  "FREQ" for graphing the vibration frequency

  "TOT" for totalized readings and can be followed by a number like "TOT1", "TOT2"

  “ALRM” for alarm conditions received from SCADA.

- Position

  Position is where the reading is taken on the equipment. On a driven machine follow the torque

from beginning to end. Positions for readings on bearings start with the bearing opposite the coupling end of the driver, ending with the bearing of the driven machine on the opposite end. The position is most often horizontal or vertical, indicated as “1H, 2H,...” for horizontal or “1V, 2V,...” for vertical. A position may also indicate the three phases of amperage readings as “1,2,3” or “A,B,C”.

Recommended Position Codes for Vibration Readings

Horizonally mounted machines:
V Vertical
H Horizontal
A Axial
X Axial

Vertically mounted machines:
D Discharge
O Opposite
R Right 90 degrees (Perpendicular)
L Left 90 degrees (Parallel)
C Cutwater

- Schedule Date

An equipment unit is scheduled when the difference of the PredictMate schedule date and the latest date of **any** reading for the equipment is greater than or equal to the interval between readings for that equipment. The default schedule date is today's date. The initial reading interval for each equipment unit is entered in Unit Information.

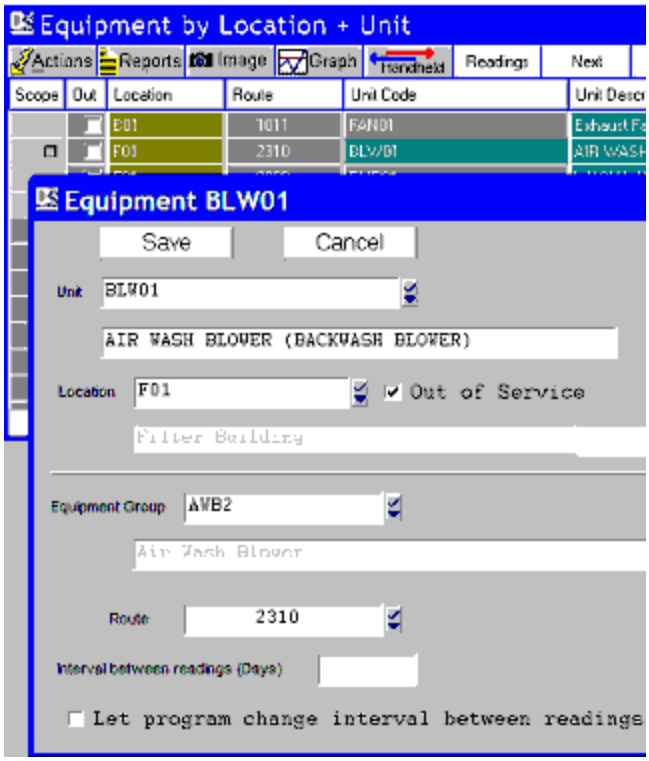
- Limits

Readings for an equipment unit are added to the alarm report when they exceed a limit. Limits are set as **one** of the following:

1. User-defined
   You can enter a limit for each equipment unit and reading type
2. Statistical limit
   A statistical limit is calculated automatically from the last six (6) readings.
3. Default Limits
   When no limit exists for the equipment unit, a default limit for the equipment group is used. A table of default limits for standard components is provided. You can add more default limits.

Data Windows for PredictMate

Equipment Information



Each equipment unit must be added (or imported from another system) in this data window before readings can be entere
Unit sort orders are:
Location + Routing number, Routing number, Location + unit, Unit Code

Equipment can be classified by the equipment group code according to components and product. The components (plus RPM and horsepower) that classify the equipment can relate equipment to Default Limits.

Priority is for predictive maintenance (PdM Priority), not necessarily for work orders as in the CMMS. If the equipment table contains a combination of assets, PdM Priority can show which equipment units should receive attention for predictive maintenance.
Tip: You can sort on another field, like Location, then Search or filter by Priority.
Change priority in many records by selecting Actions, Change All, Priority.

Changing Interval of readings

Enter an interval in days between each reading for the equipment unit. If zero, the default interval is 28 days. The program can change the interval if the equipment unit exceeds or trends toward limits if you check "Let program change interval between readings".

If you check "Let the program change interval" the interval is increased as the equipment unit readings are stable (within 10 percent), indicating the equipment needs less checking. The interval is shortened if equipment readings exceed the reading limit.

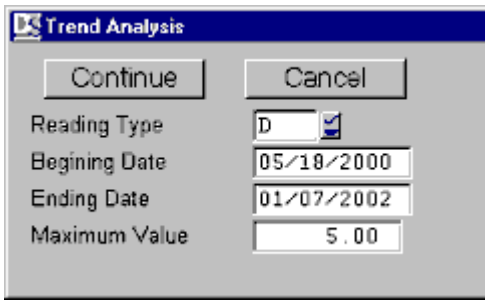
The interval for scheduling equipment readings is changed when running the alarm report and:

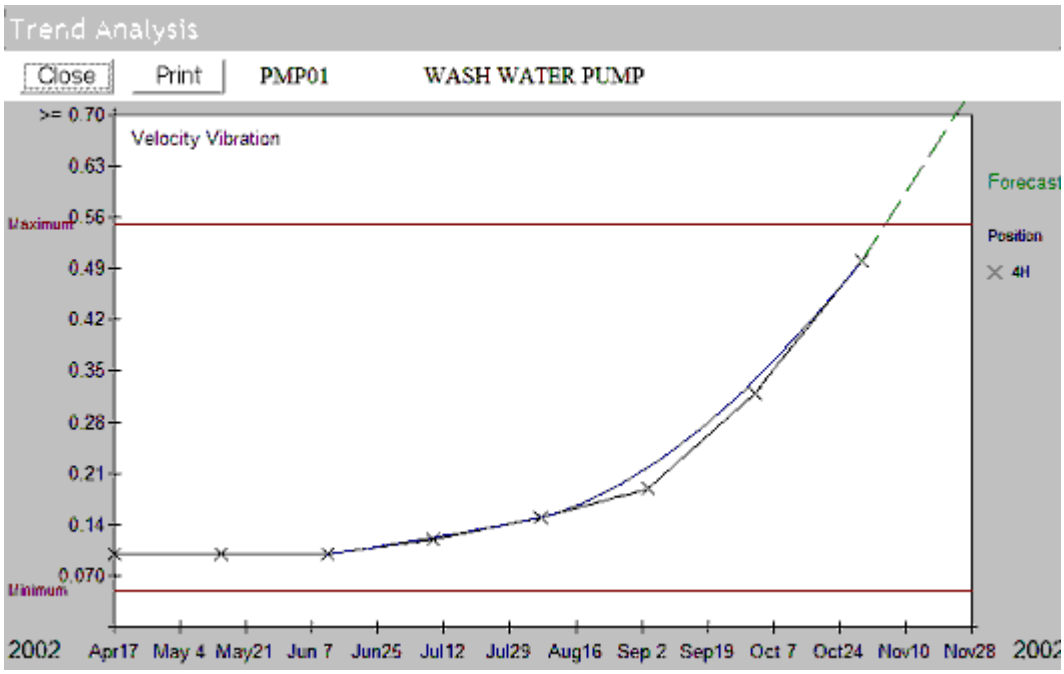
- If increasing the interval, at least one previous reading must exist.
- The equipment interval is equal than half of the interval between the last two readings (or equal or less if increasing the interval). This prevents reducing the interval when running the alarm report repeatedly.
- The new interval is less than the interval between the last two readings (or greater if increasing interval).

Graphs for Trend Analysis

Press 

to display and print graphs. Readings are plotted against their date for each position. You select up to seven positions for one reading type on each graph. The date range from data is provided. You select the maximum value for the graph which defines the vertical axis of the graph.





If only one position is selected, the graph shows readings plotted and connected on a line. A smooth line in blue is drawn with the plotted points. A red horizontal line shows when the limit is exceeded.

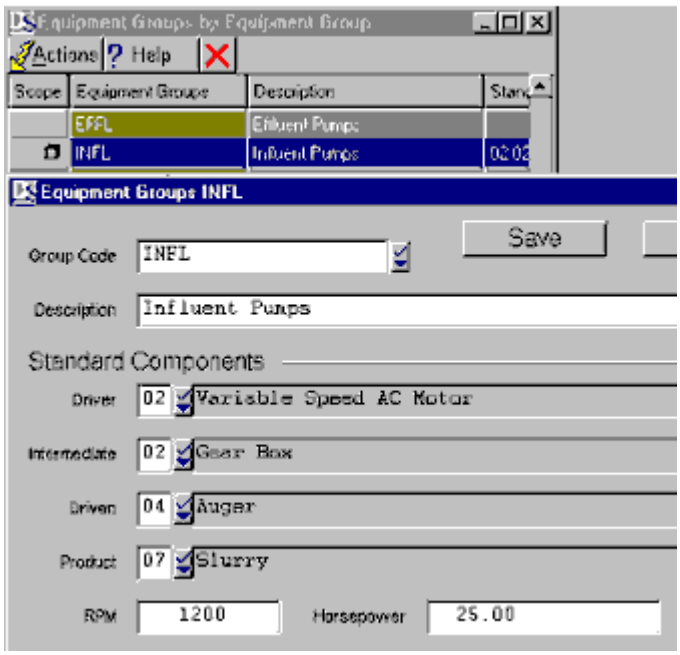
Forecast of next value

A forecast of the next value is drawn on the trend graph with a dashed line in green. The last 3 readings are used to forecast the next reading, usually at a date greater than the last date and time by the interval between the last two dates and times. A minimum of 3 data points is needed, however, if more than 3 points from the past were used, the forecast might not indicate an alarm condition soon enough. This assumes that equipment runs acceptably for a long time, then indicates failure in a relatively short period before failing.

When readings are input consistently, the forecast is constructed through the last 3 points as a parabola. If the interval between the date and time of the last 3 readings varies by a factor of 3, the forecast is predicted with a line of best fit, using linear regression.

For example, readings input the same day every week will be forecasted with a curve to the forecasted value. But if the last 3 readings were input one week, then a month apart, a line of best fit points to the forecasted value.

Equipment Groups



Equipment groups relate default limits to equipment. Select the standard components that classify each equipment group. Standard components are not required. You can leave them blank and only assign the equipment group simply for the purpose of grouping equipment without default limits by group.

Valid Equipment Components

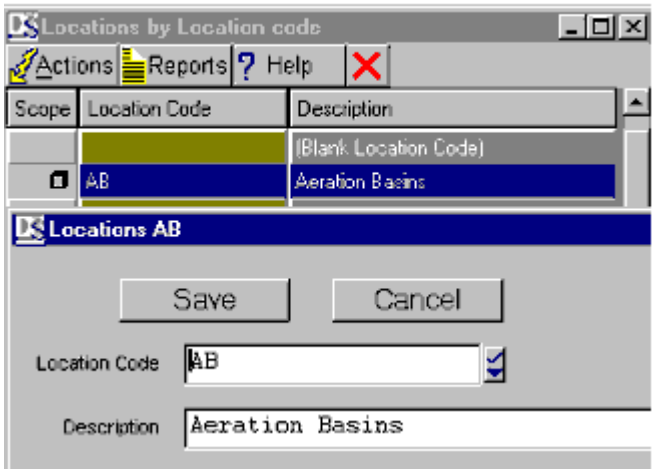
Equipment components in this table are validated in Equipment Groups. The combination of five equipment components plus RPM and Horsepower classifies the equipment group. .

Valid equipment component types are Driver, Driven, Coupling, Intermediate machine, or Product (R,N,C,I, or P). Equipment components are coded with their description. Coupling is not used in PredictMate, but the Coupling component is used in the CMMS for standard preventive maintenace.

Personnel Information

Personnel Information is limited to ID code and name. You can enter this as a person or as a trade or craft, like MECH – Mechanical, ELEC – Electrical, OPS – Operations. The Due Readings report can be selected for certain personnel.

Locations

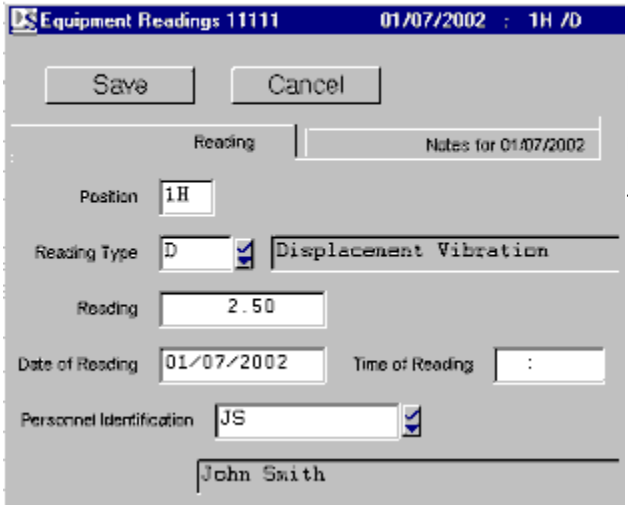


Add locations for your facility. Location codes in Equipment Information are validated against this table.

Unit Nameplates

Nameplate information is provided especially when equipment survey data is imported to PredictMate. Equipment can print filtered to horsepower if needed. See Actions >> Search or Filter.

Equipment Readings

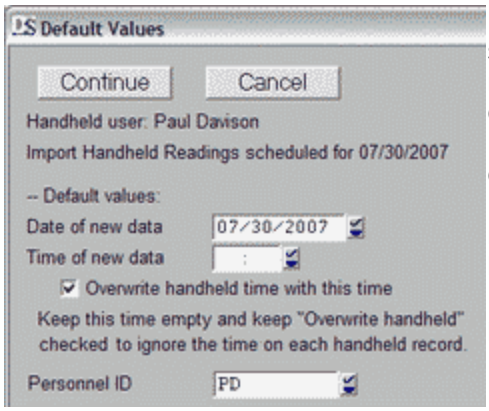


Notes are added in a window with one comment record for each set of data by date and time. Handheld notes for each reading are added to this note.
Readings for each unit display for Date, Time, Type, and Position with the latest reading first.

Images (Pictures) for each Reading

Select images for each reading, for handheld only, from Equipment (not Equipment Readings) "Actions, Image View, Reading Images".

Handheld Readings



Each time you update from the handheld you are prompted as shown. With each reading on a handheld, the date and time is recorded. However, if the date or time from the handheld is empty, this default date or time is used.

The default date is used only when the handheld date is empty.

You might prefer a single or empty time instead of the time recorded from the handheld. In this case, check "Overwrite handheld time with this time".

The personnel ID usually matches the handheld user. The personnel ID is looked up by the handheld user name.

Reserved Types for Unit Readings

Types "D" and "V" are reserved for Displacement and velocity vibration.

Type "A" is reserved for amperage. When type "A" is entered in Equipment Limits the nameplate amperage is placed in the limit field by default. You might want to add 15 percent to amperage to allow for overload. When entering amperage readings, the limit is obtained from nameplate amperage only if there are 6 or less readings and if there is no equipment limit for amperage.

Type "FREQ" is reserved for graphing the vibration frequency. Type "FREQ" vibration frequency is calculated from the displacement and velocity vibration readings.

Type "TOT" is reserved for totalized readings. You enter the totalized reading and the program calculates the difference per day from the last totalized reading. You must enter a limit as difference per day in Equipment Limits. The reading prints in the Alarm Report when the difference per day exceeds the limit. A change per day of zero prints an alarm if the equipment is not checked Out of Service. You may need to enter the reading as thousands or millions so not to exceed the field width of 6 intergers.

Type “ALRM” is reserved to indicate an alarm condition if the reading value is greater than zero (0). In this case PredictMate is receiving an alarm from a SCADA system with no analysis by PredictMate. A reading value 0 = No Alarm, 1 = Alarm. You can indicate the alarm is resolved by entering an equipment reading for the ALRM type with a reading of zero (0).

An equipment unit is NOT scheduled if the difference of the PredictMate schedule date and the latest date of ANY reading for the equipment unit is less than the reading interval for that equipment unit.

Last Reading Date + Equipment Reading Interval (Days) = Date of next scheduled reading

Archive Readings

To archive old readings, select “Actions, Export…, Archive Readings…” from the “Equipment Readings” data browser. You will be prompted for the latest date. Only readings older than or equal to this date are archived. This is useful when the readings table becomes too large or when old readings are no longer relevant. Pack data after archiving and deleting readings (File > Index > Pack).

Archived readings are saved to a CSV file, named Old_Read.CSV by default. You can import these readings if needed. Select” Actions, Export…, Import an old Archive…”.

Readings for all equipment are archived or imported, not only the records viewed in the Equipment Readings data browser.

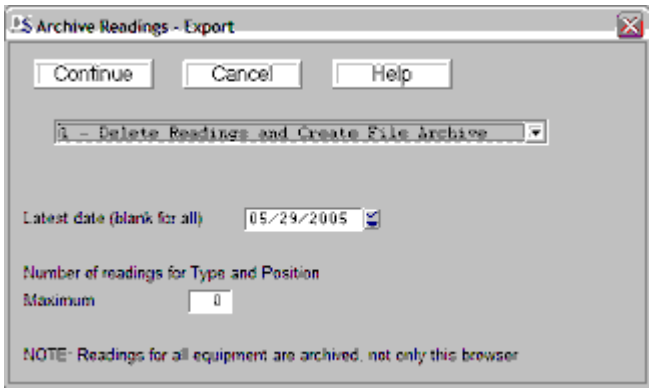
Options

Delete readings and create file archive. This deletes records as the archive is created.

Create file archive only. Select this if you want to only archive and keep old readings.

Delete readings only. Select this if you do NOT want an archive (.CSV), but want to delete old readings.

Number of readings for Type and Position, Maximum. This is the maximum number of readings kept for each Reading Type and Position for each equipment unit. A maximum of 30 readings is recommended. Keep zero to archive or delete all readings. This might be slower to process.



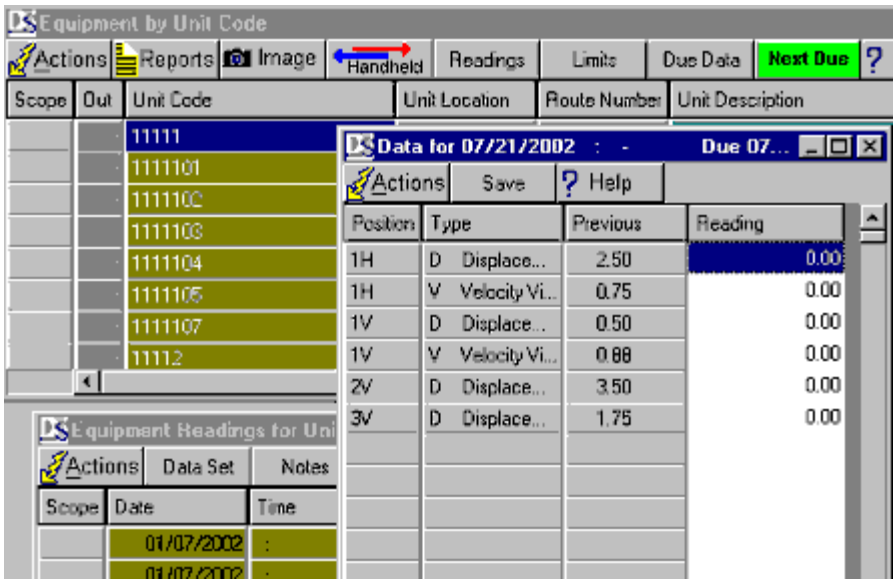
Optional Run Command for scheduled archives

To archive automatically, call PredictMate from a scheduler with this run command: "C:\DmSystem\DSPDM.EXE AUTOARCV nn" where nn is the maximum number of readings. If nn is not passed, readings are archived older than one year or the date configured to "PDMOldestRead". An archive file named "PdMOld_Read_Auto.CSV" (or name configured by ExtWorkOrder) is created in the current data folder. Archived records are removed permanently, but you can import the last archive by selecting Equipment Readings, Actions, Import…

Data Set for Readings

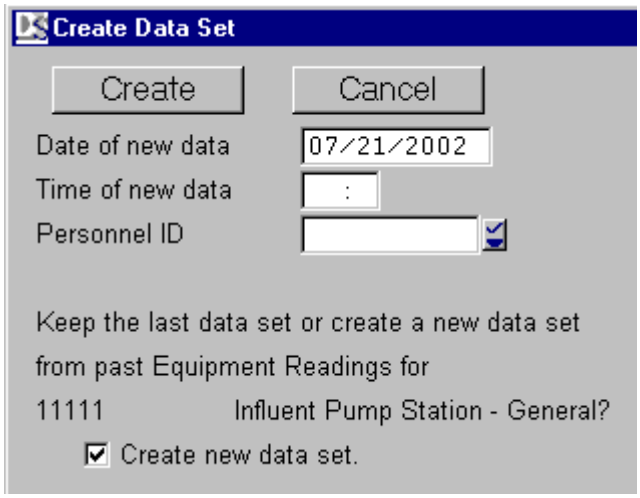
Data sets are created from each previous reading, position and type, for an equipment. This data browser provides easier entry of readings. The data is created by pressing Due Data or Data Set. Due data is created where the last reading is past the interval between readings for the equipment. Press Next Due to find the next equipment with readings that are due to be taken.

Pressing Data Set adds new readings the same as all position and type previously entered for the equipment. See How to Enter Data

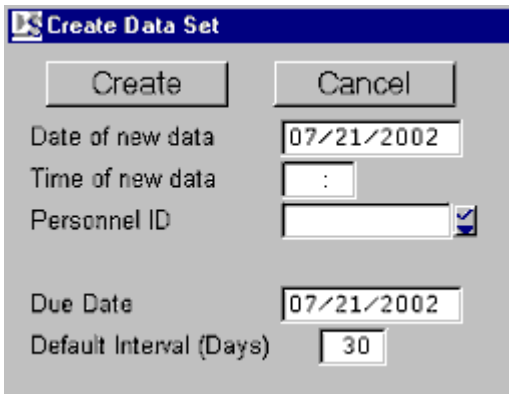


If you press Data Set the following prompt will display. This will create a set of data of each position and type that have been entered for the equipment. Each new reading will have the date, time, and personnel ID entered here.

If you want to keep the data set that was created for the last equipment, uncheck “Create new data set”. This is useful when repeating similar data among more than one equipment.



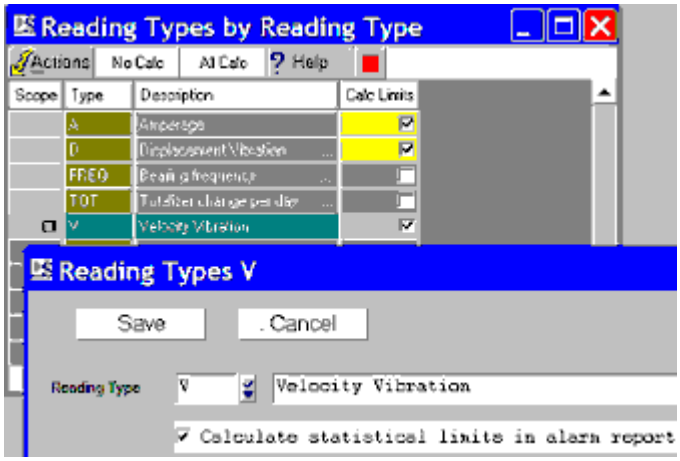
If you press Due Data the following prompt will display. Only readings that are due will be created in the data set.



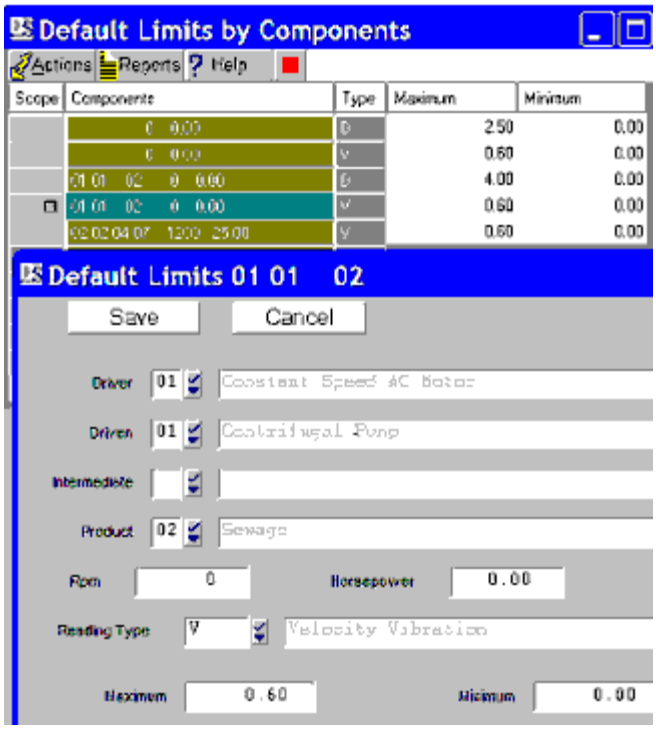
Reading Types

Reading types in equipment readings are validated against this table. You can check whether to calculate limits for this reading type as the alarm report runs. If checked, limits are calculated from a minimum of the past six readings only when default or equipment limits do not exist for this reading type.

Enter reading types such as Displacement, Velocity, Amperage. Some types are reserved, such as “A” for amperage and “TOT” for totalizer as the *difference* in totalizer reading per day.



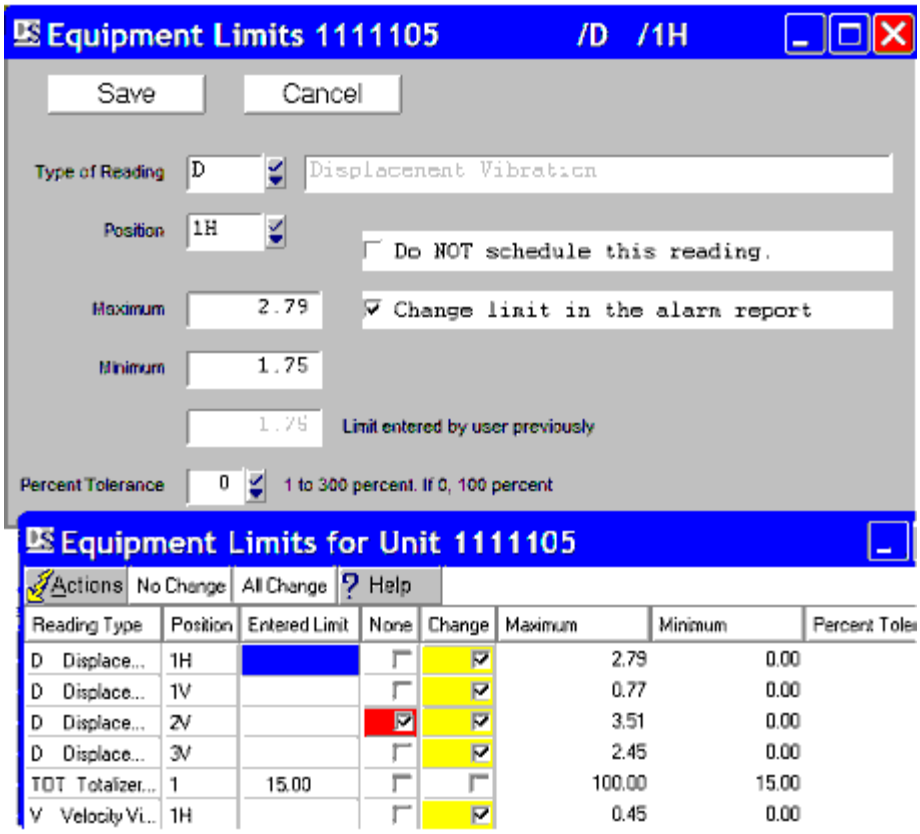
Default Limits



This data window provides input of default limits for each equipment type. When no limits exist for the equipment and the user has not marked for letting the program change limits, these limits are used instead. When entering limits for an equipment unit in "Equipment Limits", these limits are placed as defaults.

As a last resort blank equipment types replace a reading limit.
See Minimum Limit

Equipment Limits



Limits are assigned either by the user or the program for each reading on each equipment unit. This data window allows input by the user of the limits for each equipment or review and editing of the limits that were substituted by the program.

Check "Change limit in the alarm report" to allow the reading limit to be replaced with a calculated statistical limit. At least six (6) readings for a type and position are required before a statistical limit is calculated.

Percent Tolerance controls the statistical limit. A greater tolerance results in fewer alarms with the statistical limit greater (or lower for minimum) than the average of readings. The default Percent Tolerance is 100 percent. You can enter a range of 1 to 300 percent where 100 percent equates to a sigma 1 and 300 percent a sigma 3 in a calculation of square root of the sum of the squares.

Check “Do NOT Schedule this reading” or the “None” column to stop scheduling the reading by the Due Readings report and for no export to handheld. The red color in the “None” column indicates that this reading will not be scheduled.

If a default limit exists for the equipment type, that default limit is placed in the limit field if the reading limit field is empty. The default limit must have the same components (Driver, Driven, Intermediate, and Product) and an RPM and HP equal to or greater than the equipment unit. However, if an equal or greater RPM and HP is not found the program looks again for the same equipment type of the lowest (or zero) RPM and HP.

Type "A" is reserved for amperage. When type "A" (amperage) limits are entered, a default limit from nameplate information is placed in the limit field.

Type “TOT” is reserved for totalizer readings, like hour meters or mileage. Type codes like “TOT1”,

“TOT2”, are accepted as totalizer readings. The limit is change per day from the last reading.

You do not need to enter an equipment limit (except for type TOT) unless you want the equipment limit to be different from the calculated statistical limit or the default limit for the equipment type. Entering an equipment limit of zero (0) causes no limit (and no alarm) for that reading.

Minimum Limit

Enter a minimum limit in Equipment Limits or Default Limits. You can enter both a Maximum limit and a Minimum limit for a range.

If a minimum limit is entered, a reading appears on the Alarm Report when the most recent reading is less than a Minimum limit. In the trend graph a Minimum Limit is an alarm when the trend is below the Mimimum line.

Change of limit by the program affects both Maximum and minimum limits, but minimum limit is only changed if a value greater than zero was entered originally by you.

A Mimimum Totalizer type is the minimum change per day. The change per day is the difference from the last totalizer reading divided by the number of days.

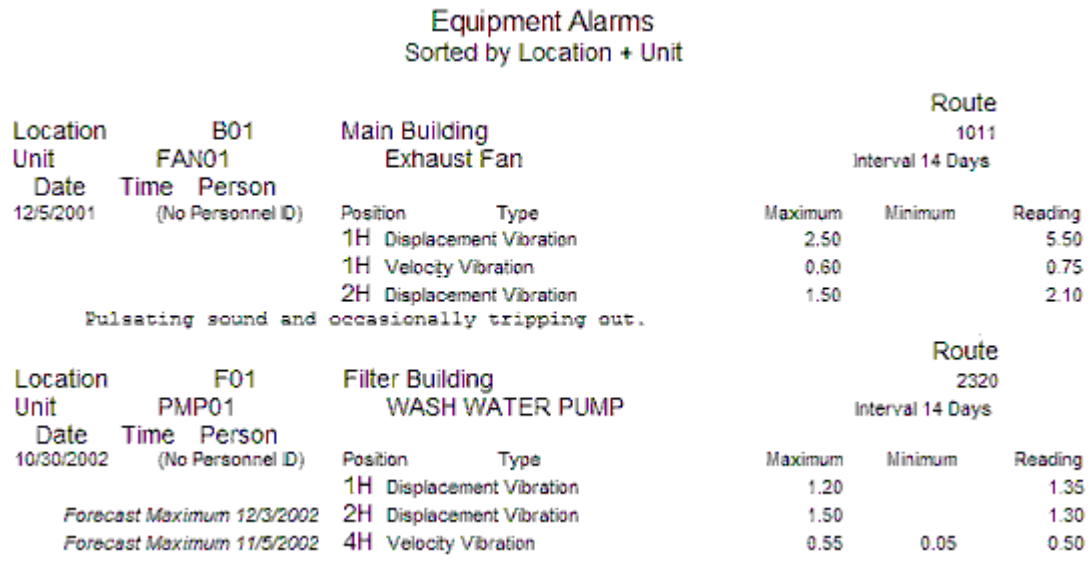
A Negative reading is not a Minimum Limit, but should always be entered as an absolute number (positive number). In this case trends and alarms are upward. For example, readings of -100, -150, -200 are entered as 100, 150, 200.

Standard Components

Standard components are provided. You can add more. Standard components are selected from equipment groups to classify the equipment group

```
Component Type: R Driver
Code: 01
Constant Speed AC Motor.
```

Reports for PredictMate Predictive Maintenance



Equipment Alarms
Sorted by Location + Unit

Location B01 Main Building — Route 1011
Unit FAN01 Exhaust Fan — Interval 14 Days

Date	Time	Person	Position	Type	Maximum	Minimum	Reading
12/5/2001		(No Personnel ID)	1H	Displacement Vibration	2.50		5.50
			1H	Velocity Vibration	0.60		0.75
			2H	Displacement Vibration	1.50		2.10

Pulsating sound and occasionally tripping out.

Location F01 Filter Building — Route 2320
Unit PMP01 WASH WATER PUMP — Interval 14 Days

Date	Time	Person	Position	Type	Maximum	Minimum	Reading
10/30/2002		(No Personnel ID)	1H	Displacement Vibration	1.20		1.35
Forecast Maximum 12/3/2002			2H	Displacement Vibration	1.50		1.30
Forecast Maximum 11/5/2002			4H	Velocity Vibration	0.55	0.05	0.50

The Alarm Report lists equipment readings that exceed their limit. The latest comment for an equipment unit is included.
You can print the Alarm Report from a scheduler with this command-line argument:

“c:\dmsystem\DSPdM.exe ALRMPRNT”. This is intended as an automatic printout for technicians each day, or as scheduled.

Forecasting date of alarm

If no alarm is exceeded for a Type and Position, future alarms are forecasted, up to three times the interval for an equipment. If an alarm condition is forecasted, the comment "Forecast <Minimum/Maximum> <Date>" prints on the alarm report or external work orders.

Type "TOT" readings

Totalizer readings are handled differently. The "limit" is the daily difference from the last total reading.

External Work Orders

To create work orders from alarms, select "Reports", "Alarms to Davison Maintenance work orders".

To avoid creating too many work orders follow this procedure.
1) From "Reports" select "Tag Equipment with Alarms".
2) Remove the tag for equipment that do NOT require a work order. When finished only equipment that require a work order should be tagged. You can move to the next tag by pressing Ctrl-N or click on the "Scope" header for a menu and select "Go to next tag".
3) Select "Reports", "Alarms to external work orders" or "Alarms to Davison Maintenance work orders". Only the tagged records will create a work order.
If you selected "Alarms to Davison Maintenance work orders", a work order with the alarm information is created for equipment in Davison Maintenance.

You can add work orders to Davison Maintenance from a scheduler with this run command: “c:\dmsystem\DSPdM.exe ALRMTOWO”. Work orders for predictive alarms that were added previously for the same equipment are not duplicated. This is intended for use with ODBC Import.

If you select "Alarms to external work orders", a text file is created of external work orders for each equipment alarm. Custom formats are available. The standard format is a comma-separated (.CSV) file as follows. The first line contains field names. Subsequent lines contain a work order with the alarm readings.

```
"Eq_Code","Comp_Code","CAUSE","Da_Sched","Time_SCHED","Notes"
"11111","","_PDM","01/07/2002","  :  ","Predictive alarm on 01/07/2002 by John Smith
Position, Type, Limit, Reading

1H  Displacement Vibration                      1.75       2.50
1H  Velocity Vibration                          0.50       0.75
2V  Displacement Vibration                      0.66       3.50
```

Custom formats are available upon request for export to various CMMS programs.
This run command can create external work orders from a scheduler: “c:\dmsystem\DSPdM.exe ALRMTOEX”

Equipment Readings List

All Equipment Readings
Sorted by Location + Route Number + Unit

Date	Time	ID	Position	Type	Limit	Reading
Location:			(Blank Location Code)		Route #	
Unit	111X			Grinder	Interval: 14 Days	
07/01/2002						
			1H	Displacement Vibration		2.40
			1H	Velocity Vibration		0.80
			1V	Displacement Vibration		0.50
			1V	Velocity Vibration		0.35
			2V	Displacement Vibration		2.10
			3V	Displacement Vibration		1.70
06/01/2002		PD				
			1H	Displacement Vibration		1.50
			1H	Velocity Vibration		0.75

All the readings for each equipment within the dates prompted are listed with the latest readings first. Comments for a set of data at a date and time are included at the end of the set of data.

Due Readings

Equipment Readings Due on 07/21/2002 Default interval 30 Days
Sorted by Unit Code

Location: IP Influent Pumping Staion Route # 5.00000
Unit 11111 Influent Pump Station - General Interval: 28 Days

Position	Type	Last reading(s) by / New reading(s) by:	John Smith	on 01/07/2002 / on ___/___/_____
1H	Displacement Vibration		2.50	_____.____
1H	Velocity Vibration		0.75	_____.____
1V	Displacement Vibration		0.50	_____.____
1V	Velocity Vibration		0.88	_____.____
2V	Displacement Vibration		3.50	_____.____
3V	Displacement Vibration		1.75	_____.____

Note on 1/7/2002

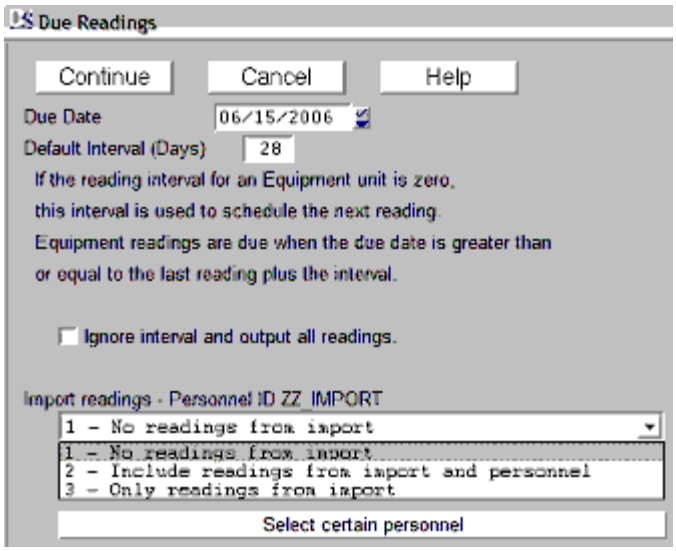
Personnel use this list to take readings. It contains the latest reading and comments for reference. Only due readings appear on this list. Readings are due when the last reading for a reading type and position for a equipment unit is equal to or older than the equipment unit's interval.

Units with the comment "No Previous" have no previous readings.

Due Readings Prompt
The following prompt will display each time the Due Readings report runs or with export to handheld. The “Due Date” can be a past or future date, but defaults to today’s date. Equipment readings are due when the due date is greater than or equal to the date of the last reading plus the interval in days.

Readings from SCADA are excluded from scheduling by PredictMate unless you select otherwise when prompted. Usually readings that were imported are excluded from scheduling because their scheduling is dependent on SCADA or other automated processes. An exception is when SCADA field devices are out of service. Then only imported SCADA readings are selected for retrieving by handheld or printout.

Select certain personnel to list only readings that were taken previously by those personnel.



Equipment Default Limits

Default Limits

Reading Type				Reading Limit
Standard Components				
V			Velocity Vibration	
				0.60
D			Displacement Vibration	
Intermediate	02		Gear Box	
				1.50
Driver	01		Constant Speed AC Motor	
Driven	01		Centrifugal Pump	

This report lists default limits for each equipment type. When no limits exist for an equipment unit, these limits are used instead.

Equipment Limits List

Equipment Limits
Sorted by Location + Route Number + Unit

Type		Position	Scheduled	Entered Limit	Limit	Changed by Prog	Tolerance per cent
Location:	(Blank Location Code)						
Unit 1111105	Grinder No. 5						
D	Displacement Vibration						
		1H		0.00	2.21	Yes	
		2V		0.00	0.00	Yes	
TOT	Totalizer change per day						
		1	No	20.00	20.00		
V	Velocity Vibration						
		1H		0.45	0.45	Yes	

This report lists the limits for each equipment. Readings that are marked for no more scheduling are indicated.

Equipment List with Type Codes

Equipment with Group and Type Codes
Sorted by Location + Route Number + Unit

Unit / Group
Group Components

Location: IP Influent Pumping Staion
1111101 Influent Wastewater Pump No. 1
INFL Influent Pumps
Driver 02 Variable Speed AC Motor
Intermediate 02 Gear Box
Driven 04 Auger
Product 07 Slurry
RPM >= 1200 Horsepower >= 25.00
1111103 Influent Wastewater Pump No. 3
INFL Influent Pumps
Driver 02 Variable Speed AC Motor
Intermediate 02 Gear Box

This report lists equipment showing the components, RPM, and horsepower that classifies the equipment unit. Equipment classification is related by the Equipment Group code