Preventive Maintenance Training Manual

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Table of Contents

1 Preventive Maintenance 1
1.1 Objectives 1
1.2 Understanding the PM Application 2
1.3 Creating a PM Record 6
1.4 Duplicating a PM Record 10
1.5 Manually generating Work Orders from a Preventive Maintenance record 12
1.6 Preventive Maintenance - Student Exercise #1 14

1 Preventive Maintenance

1.1 Objectives

- Describe the Preventive Maintenance application and its uses
- Understand the relationship between PM records and Job Plans
- Create PM records
- Generate Work Orders from PM Records
- Duplicate a PM Record

1.2 Understanding the PM Application

The Preventive Maintenance (PM) Application acts as a scheduling tool for recurring planned work. Although the name of the application is Preventive Maintenance, the application is not limited to scheduling and creating only PM work orders. Work that occurs on any repetitive schedule can be documented in the PM application.

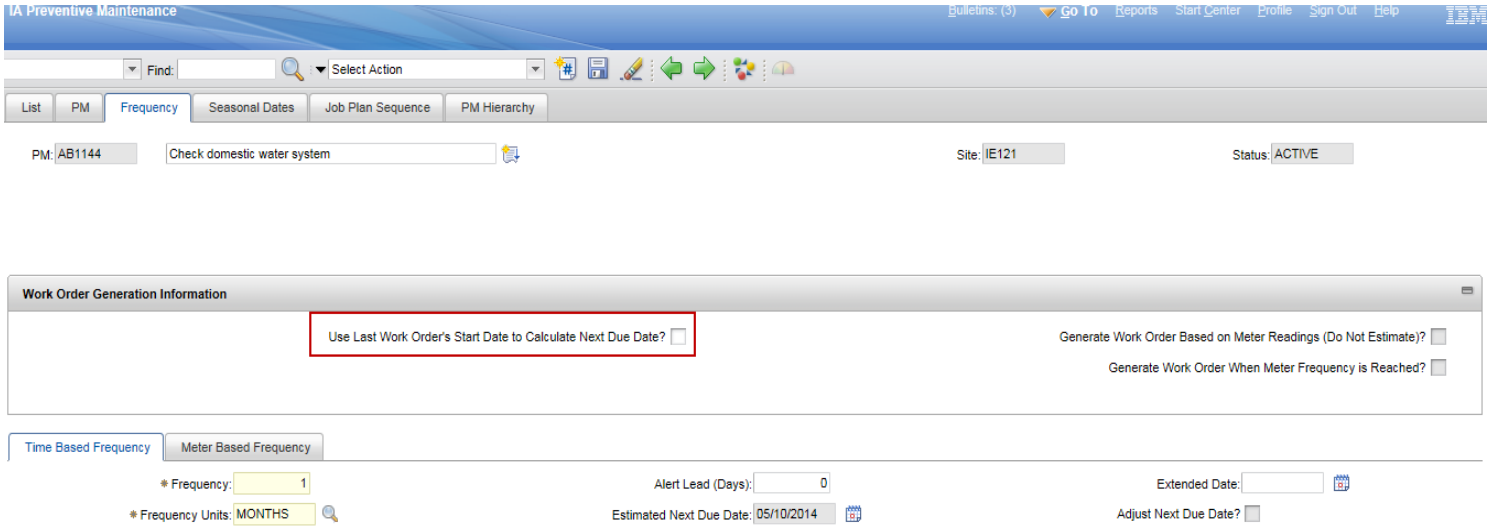
The PM application can be confusing since it is actually a scheduler of job plans and *Planned* work orders. In Maximo, PM records are templates for work orders. They can be used for many work types and sub types. PM specific work is generally assigned to asset records, whereas Facility Operation work is typically created for location records.

In general, the industry standard definition for PM is regularly scheduled periodic maintenance activities that occur over the course of a single year (i.e., the maintenance occurs at least once a year). Typically, a PM Record is established for a single asset record and should be on a fixed schedule (this provides documentation for the work that you plan to accomplish and its frequency). Often an asset record will have monthly, semi-annual, and annual tasks that can be reflected in different job plans, all of which are associated with a single PM Record. These job plans are sequenced, which allows Maximo to assign the correct job plan each time a work order is generated. The work orders are for a specific event and should be closed as soon as the work is accomplished and documented.

Recurring Maintenance is regularly scheduled periodic maintenance activities that have more than one year between occurrences (i.e., Painting, and Caulking). The PM Application can be used to document and generate these work activities as well. PM Application Records for Recurring Maintenance should be on a floating schedule based on the completion date of the previously accomplished work order. These PM records should be associated with an asset record and should be closed as soon as the work is completed and documented. Because of the nature of facility management budgets, Recurring Maintenance work orders may need to be generated years in advance.

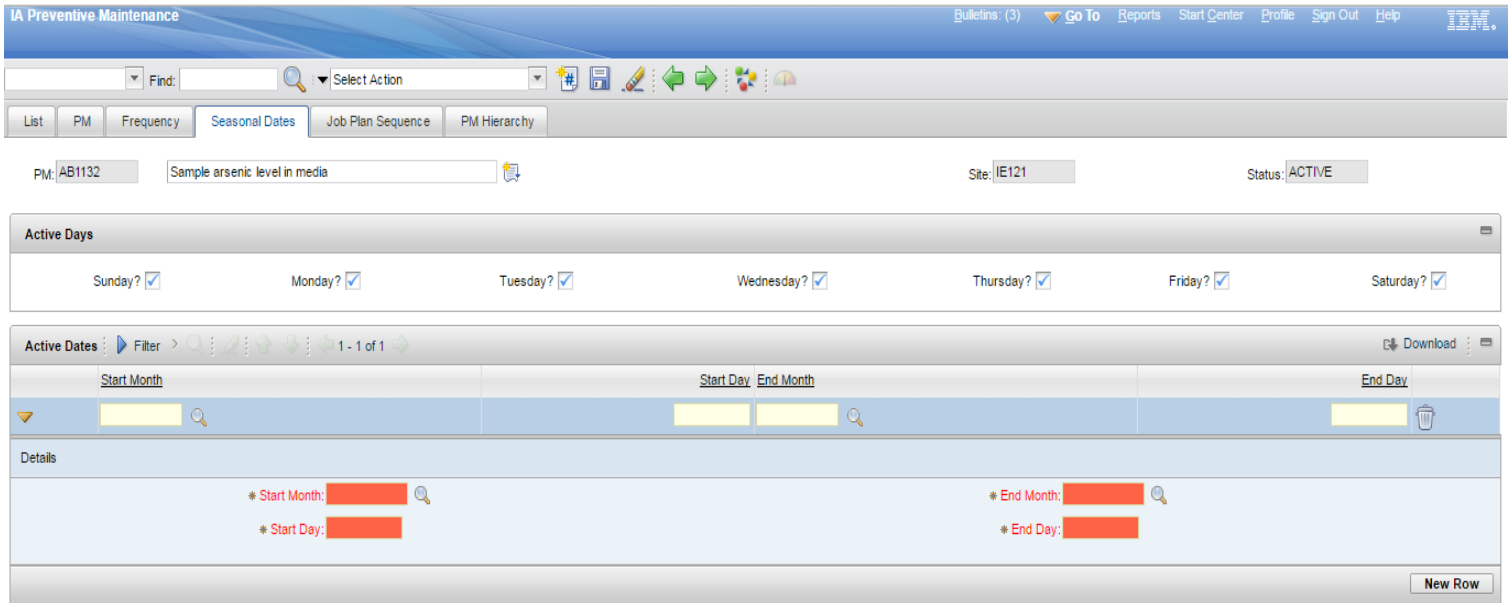
The Frequency Tab

The Frequency tab creates a PM schedule for generating work orders based on elapsed time between work orders, changes to equipment meter readings, or both. The IA-FMS (Maximo) system currently uses the PM scheduling that measures only elapsed time. The active month or season of a PM can be specified. Additionally, an extension date that can override a usual due date without interrupting the PM's established frequency schedule can be entered.



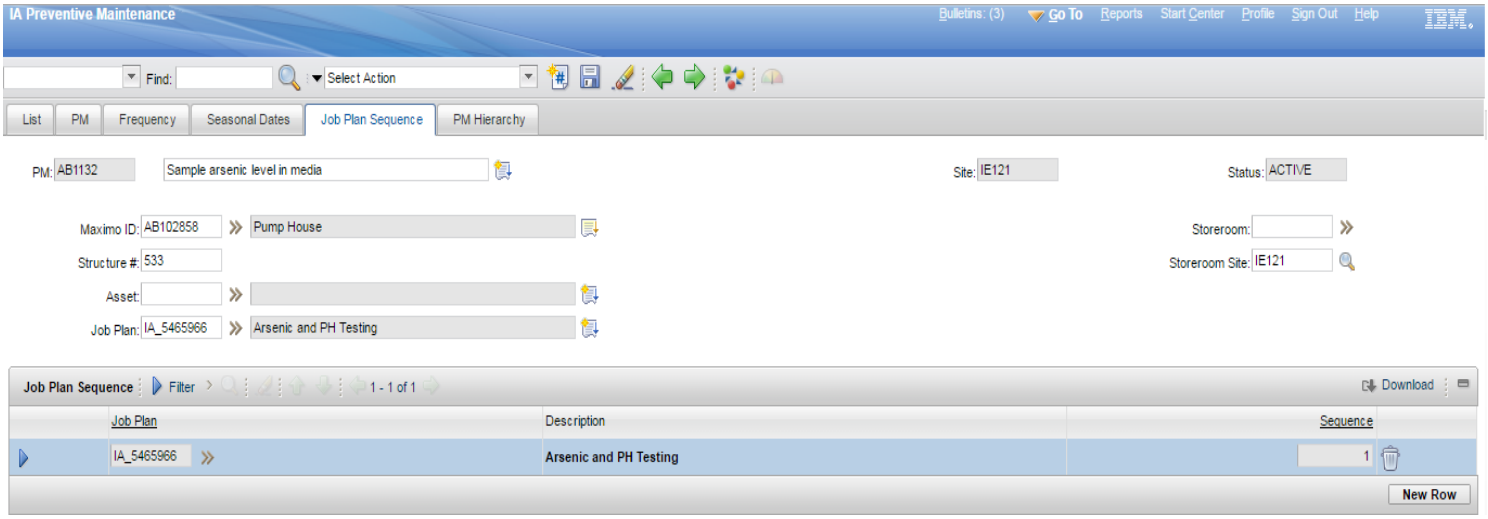
'**Use Last WO's Start Information to Calculate Next Due Frequency?'** box. If this box is checked then a PM work order is to be generated on a ***Fixed interval***. This means that if a PM is due every 30 days then IA-FMS (Maximo) will generate PM work order every 30 days (whether or not the previous work order has been completed or not). If the box is unchecked this is called a ***Floating interval***. This means that the Estimated Next Due Date will be based on the current PM work orders Completion Date. Example: If a PM work order had a 30 day frequency and was generated on January 1st but the PM work order was not completed until January 15th then the next PM work order would generated February 15th.

Seasonal Dates Tab



Some PMs are seasonal, which means that they only generate work orders during a specified period of time each year. You can specify a PM's active months or seasons, and you can have multiple active seasons for a single PM. You can also specify on which days of the week you want the PM active, and work orders will only generate for the PM on those days.

Job Plan Sequence Tab



This tab is used to assign multiple job plans to IA-Preventive Maintenance (PM) records. With it, you can set up a standard sequence for maintenance procedures (e.g., monthly, quarterly, and annual job plans). By assigning a sequence number to each job plan, you specify which job plan is selected when you generate a work order from the PM record. Sequence numbers are based on a multiplier of the most frequent job plan. In this way, PMs can be planned for a monthly cycle (once per month, or 1), quarterly (once in 3 months, or 3), and annually (once in 12 months, or 12).

For example:

Job Plan (technology)	Sequence	Action
IA_5093664	1	Monthly Service on AC Package Unit
IA_5093666	3	Quarterly Service on AC Package Unit
IA_5093668	12	Annual Service on AC Package Unit

Note: Always start with the most frequent job plan (the one identified on the main screen); all others will occur in multiples of that original frequency. Use the Select Action menu and select the View Sequence; it will list out the WOs to be generated from the work order. In this HVAC example, it would generate the work orders as the following table illustrates.

Job Plan Sequence	Scheduled PM Time	Work Order For ...
1	June	Monthly Service
1	July	Monthly Service
3	August	Quarterly Service
1	September	Monthly Service
1	October	Monthly Service
3	November	Quarterly Service
1	December	Monthly Service
1	January	Monthly Service
3	February	Quarterly Service
1	March	Monthly Service
1	April	Monthly Service
12	May	Annual Service
1	June	Monthly Service

In this scenario, the work order title will remain the same ("Service for HVAC"), but the accompanying job plan issued with the work order would specify the different level of work activity (e.g., monthly, quarterly, and annual) and the specific plan steps required for these different work activities. Job plan sequencing is a powerful tool that can reduce the number of PMs established for a single asset record. Using the example above, for service to an AC Package Unit, consider that the job plan sequence shown above will create only one PM against the AC Package unit, while the alternative of entering a PM for each level of service (monthly, quarterly, and annual) could lead to the creation of three different PMs.

Generating Work Orders from the PM

PM records are schedulers for work order generation. PM work orders can be generated *automatically or manually*. You should examine your scheduled PMs to ensure that you are scheduling your work and personnel as efficiently as possible; this is called load balancing.

After load balancing, you should generate work orders due over the next two weeks or one month, depending on your work planning period, and assign and approve work orders to specific employees. Generally only one person at a site needs to be responsible for generating work orders from all the PM records if you have done an effective job in load balancing.

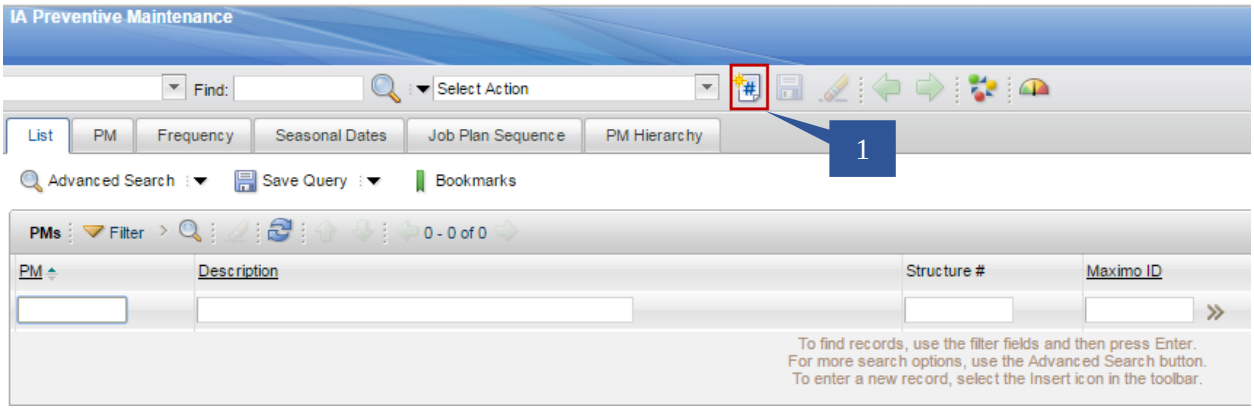
With a goal to do as much annual work planning as possible, you may find that you want to generate work orders for the entire year. Remember, this will only work if there is a fixed schedule and it may result in hundreds of work orders depending on the size of your operation and the amount of required PM activities. Once a specific PM has generated a work order no others will be generated until the next due date is reached. For example; if all PMs due for the next month have been generated, another user cannot inadvertently re-generate the work orders.

1.3 Creating a PM Record

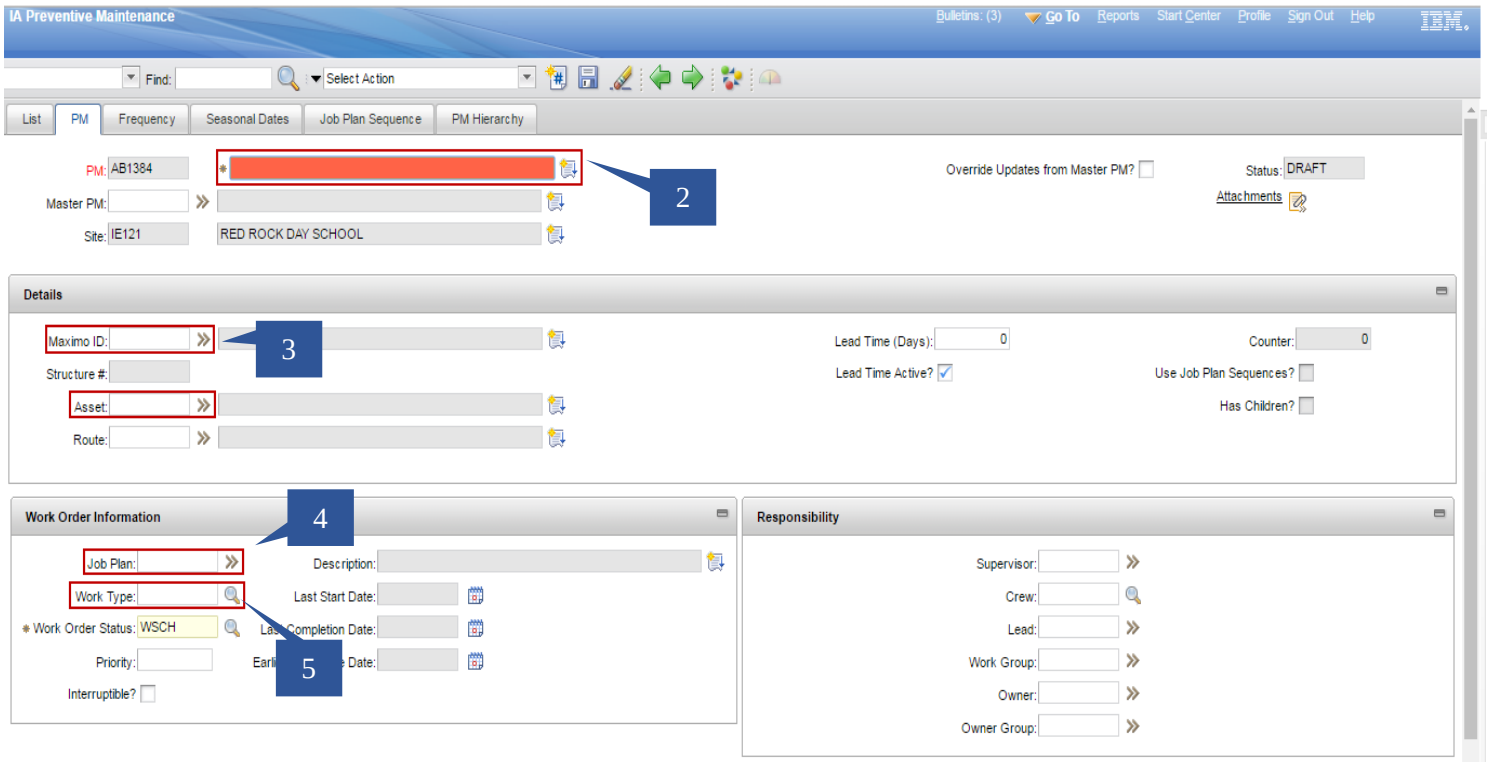
Remember, the PM application is a scheduler of work orders to be generated. Essentially, the PM records can be thought of as "Work Order Templates" for recurring work (PM or longer frequency recurring maintenance).

From the **Go To** menu, navigate to the **IA Preventive Maintenance Application** within the Preventive Maintenance Module.

1) Click on the **New PM** icon located on the tool bar.



2) On the PM Main Screen, enter a **Description** for the work.
3) Select the **Location (or) Asset** for the PM.
4) Enter the **Job Plan** to be used in the PM (No Required).
5) **Work Type** should be **PM**.



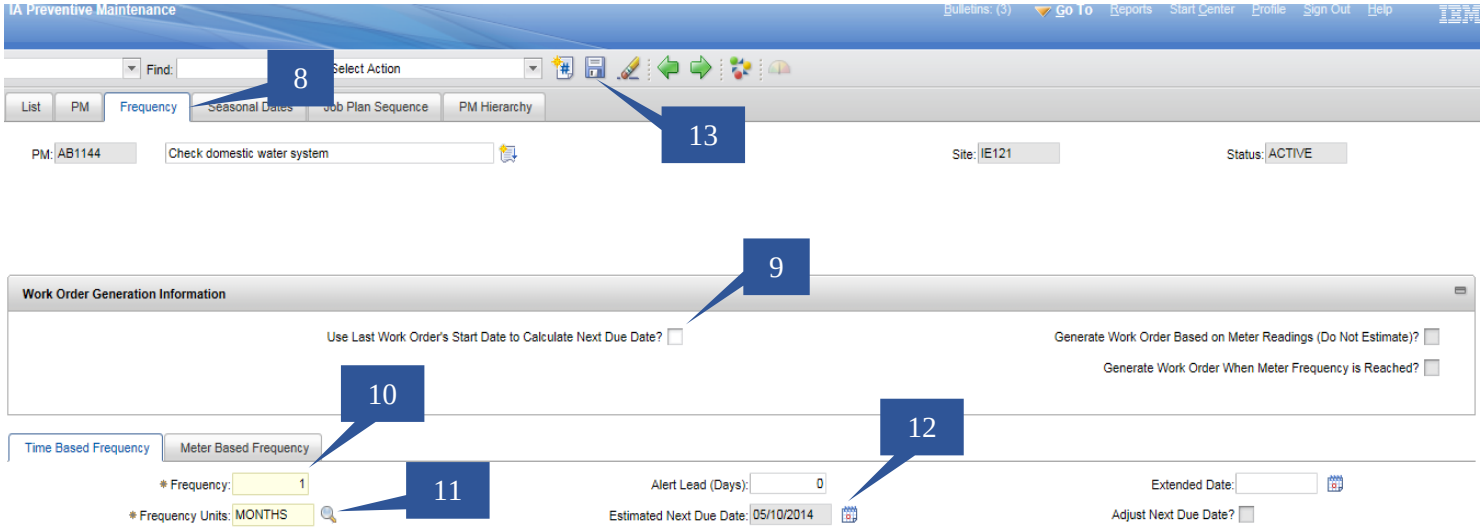
Note: PM records are created for *either* a location *or* an asset not both.

6) Enter additional fields in the Work Order Information and Responsibility sections that you want entered in the work orders generated from this PM. Upon creation of the work orders, Maximo will populate the work order with the values you enter. The dates in this section will auto-fill based on information provided on the frequency tab and when work orders are generated. Key fields include:
   a) Work Order Status
   b) Priority
   c) Supervisor

> **Note:** It is a good idea to leave the work order status as the default WSCH (Waiting Scheduling). This will provide you with an easy means to search and find work orders that have been generated from a PM and are awaiting assignment.

7) Click the **Save** icon .

8) Click the **Frequency** tab.



9) Check **Use Last WO's Start Information to Calculate Next Due Frequency?** box if you want the due dates of generated work orders to be calculated from the target start date of the last work orders. If you do not wish to calculate the Next Due Date based on the target start of the last work order (for example, if you want the next work order to be generated when the last work order was actually competed instead), clear the check box.

10) Enter the PM frequency in the **Frequency** field.

11) Select the **Frequency Units** (Days, Weeks, Months, Year).

12) Enter the **Estimated Next Due Date**. This determines when the next work order will be generated. When you initially create the PM record, this will be when you want the PM to start.

13) Click the **Save** icon .

Job Plan Sequence Tab

Components or equipment often have a variety of tasks associated with different job plans, such as those for: Weekly, Monthly, Quarterly, and Annual work. The PM application uses the information in the Job Plan Sequence tab to determine which job plan is attached each time a work order is generated. It is important to have the job plans in the order of occurrence using the proper multiplier in the sequence field.

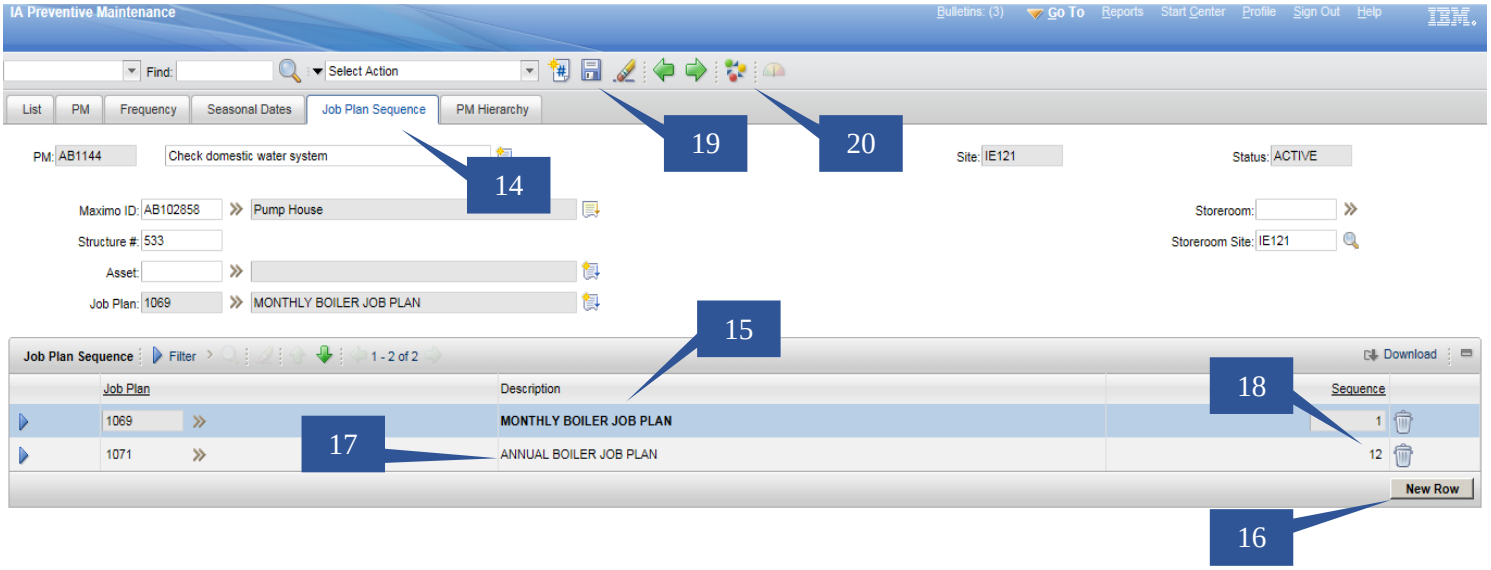
14) Click on the **Job Plan Sequence** tab.

15) The Job Plan you entered on the PM tab will populate in the Job Plan Sequence section with a sequence of 1.

16) If you want to define additional job plans to associate with the PM, click the **New Row** button.

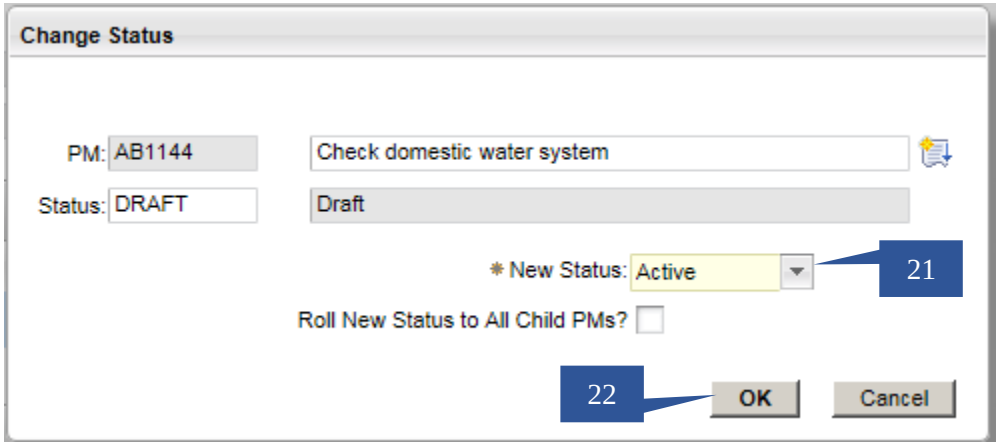
17) Enter the next most frequent **Job Plan**.

18) Enter the **Job Plan Sequence** multiplier (this is a multiplier of the original job plan frequency number - if the original job plan is Monthly and the next most frequent job plan in quarterly, you would enter 3 to indicate that on every 3rd monthly run of the PM, the "quarterly" job plan will be associated with the work order).



19) Click the **Save** icon .

20) Activate the PM by changing the status. Click on the **Change Status** icon . The Change Status window will open.



21) Select **Active** from the New Status pick list.

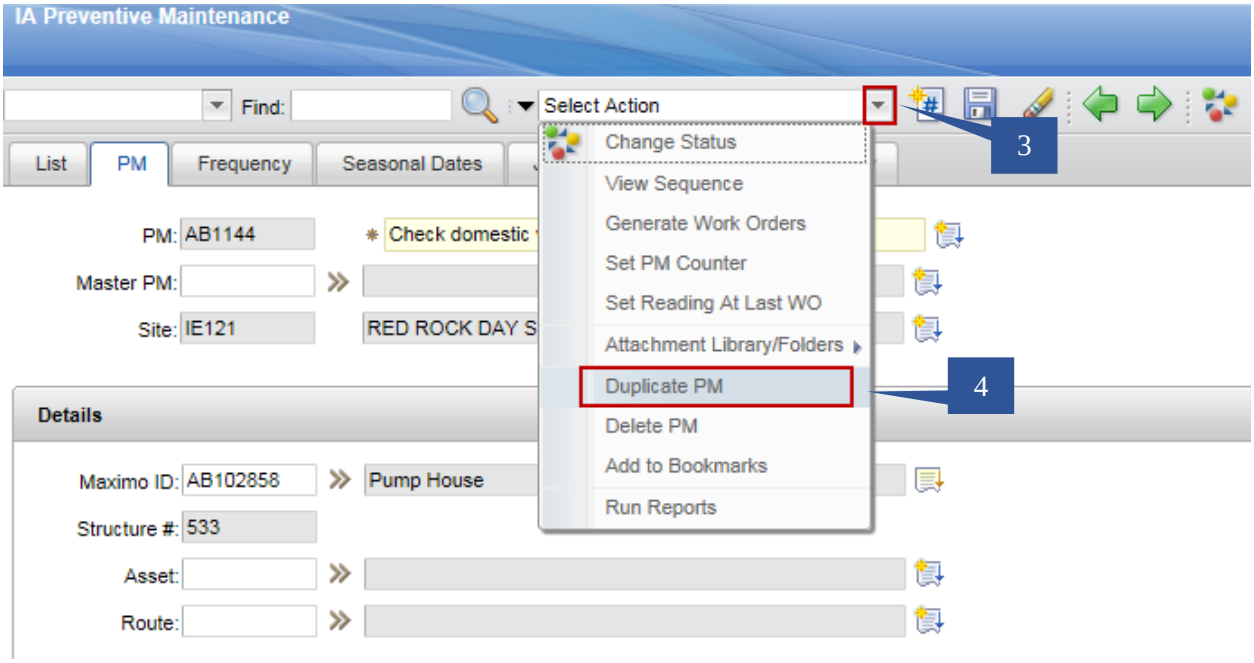
22) Click **OK.**

23) Click the **Save** icon .

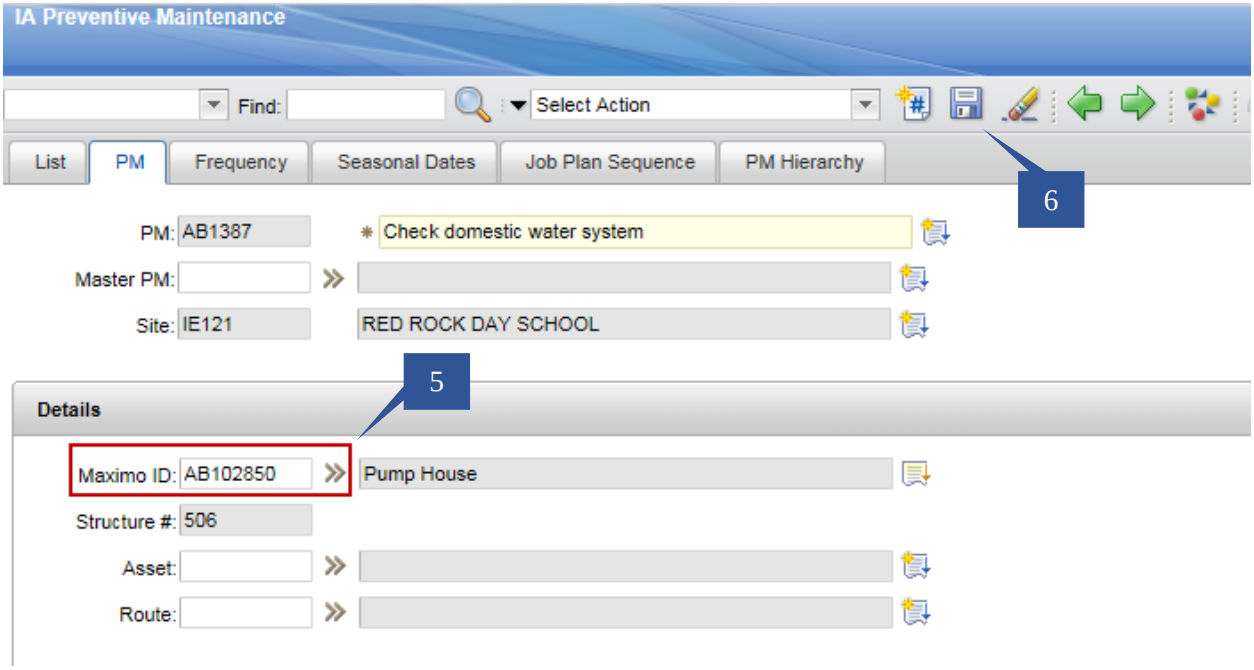
1.4 Duplicating a PM Record

Oftentimes you may want to duplicate a previously created PM record. The procedure to duplicate the PM is as follows.

1. From the Go To menu, navigate to the **IA Preventive Maintenance Application** located within the Preventive Maintenance Module.
2. Find and open the PM record you wish to duplicate.
3. Click on the **Select Action** menu.
4. Select **Duplicate PM.**



5) Update the **Location,** and any additional information as necessary.

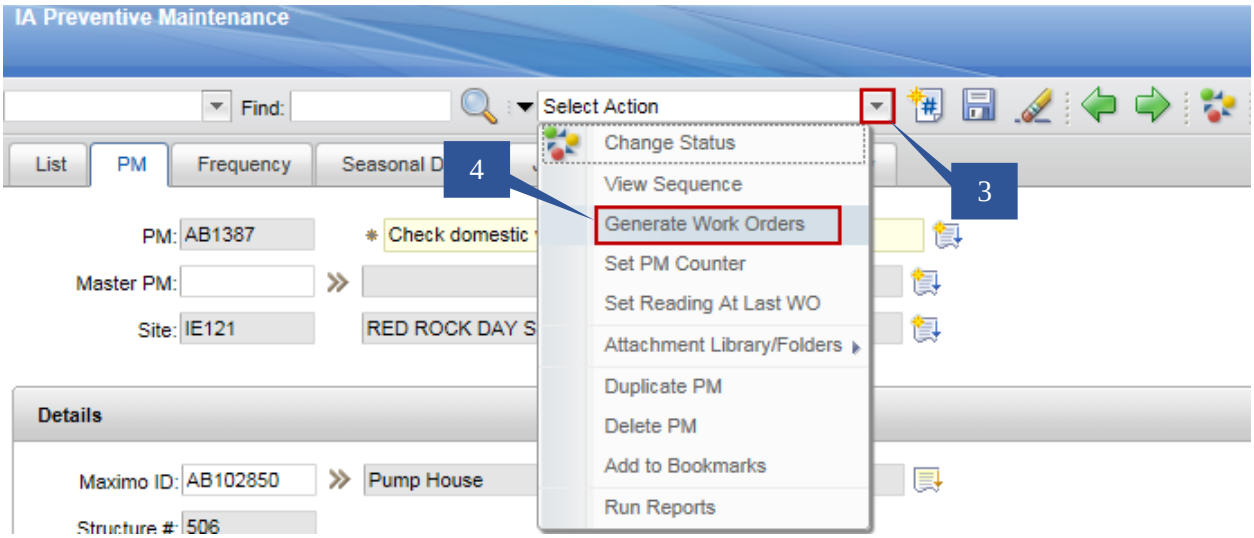


6) Click on the Save icon .
7) Change the record status to **Active.**

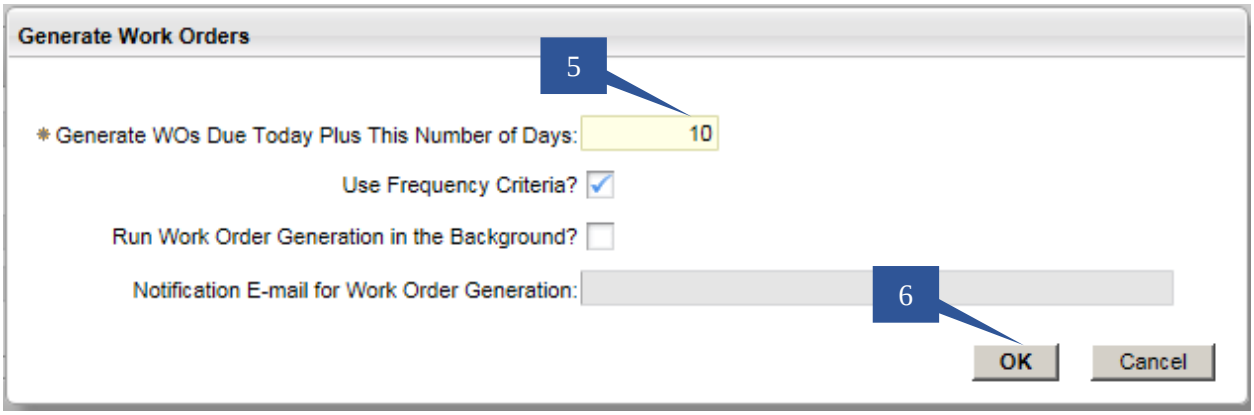
1.5 Manually generating Work Orders from a Preventive Maintenance record

To generate work orders from a PM, the PM status must be ACTIVE, and the asset or location listed on the PM must have a status of OPERATING.

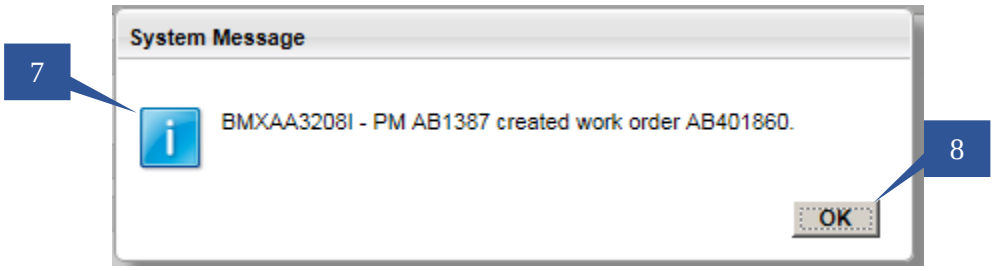
1) From the **Go To** Menu, navigate to the **IA Preventive Maintenance** application located within the Preventive Maintenance Module.
2) Select the PM Record.
3) Click on **Select Action.**
4) Select **Generate Work Orders.**



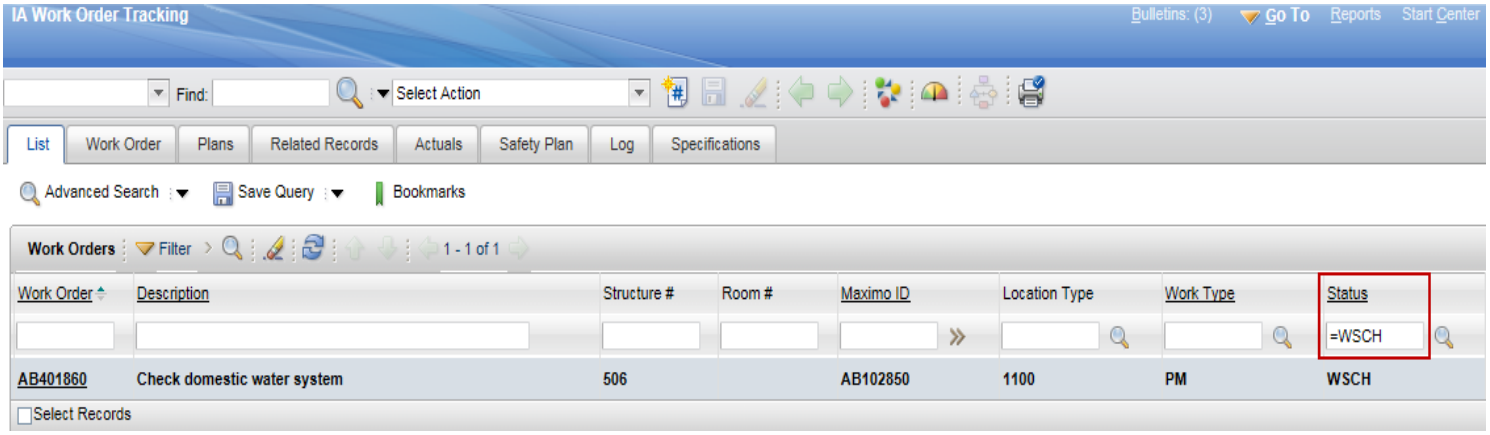
5) Enter the number of days from today's date that work orders are due (this will specify that you want work orders generated for PM records "coming due" in the ***Next 'x'*** *days*.)
6) Click **OK.**



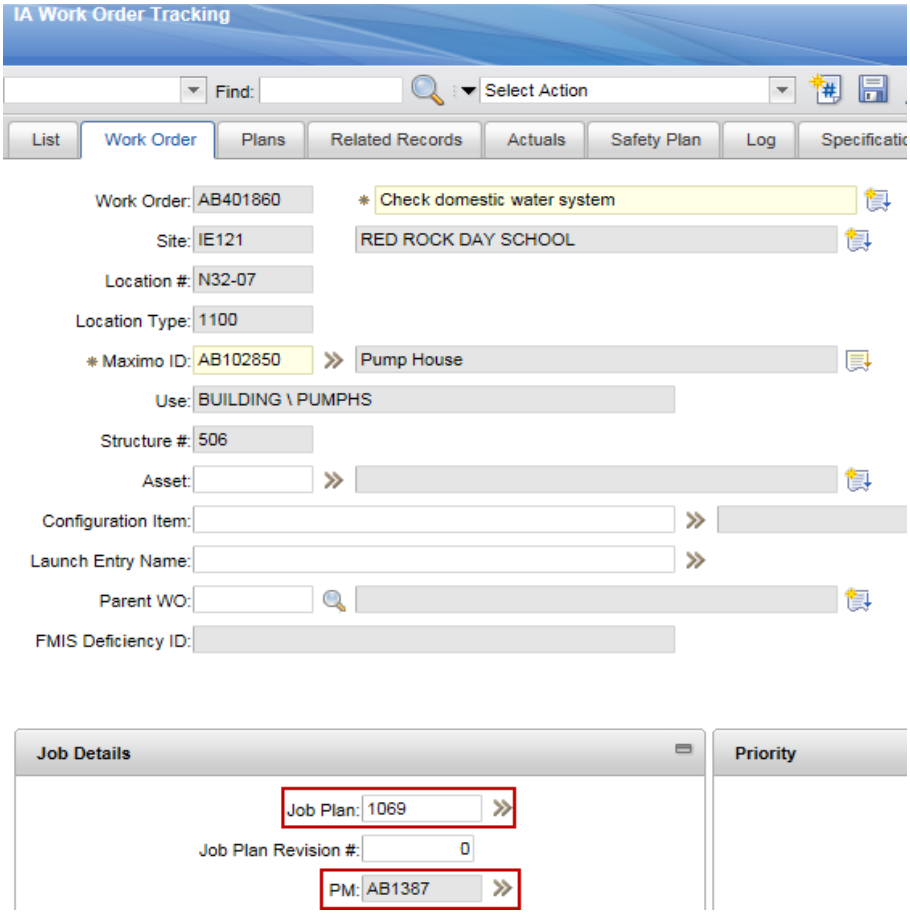
7) A Message will appear indicating which PMs generated work orders.
8) Click **OK.**



The work orders generated from PM records can be found in the IA Work Order Tracking application. Search for work orders with a status of 'WSCH' to easily locate and assign/schedule these newly created work orders.



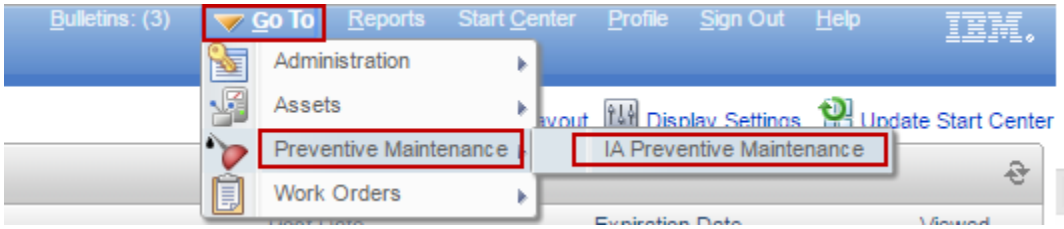
In the Job Details section of the work orders generated from a PM record, the PM record number from which it was generated will be identified. This can be used to track the work order back to the PM. Also, the work order contains the Job Plan specified in the PM record.



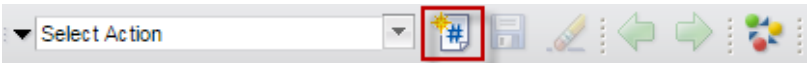
1.6 Preventive Maintenance- Student Exercise #1

In this exercise you will create a basic **Preventive Maintenance** record to maintain an AC Package Unit. After creating the PM record you will generate the corresponding PM Work Order, record actuals, and mark the work order as completed. Use the following steps:

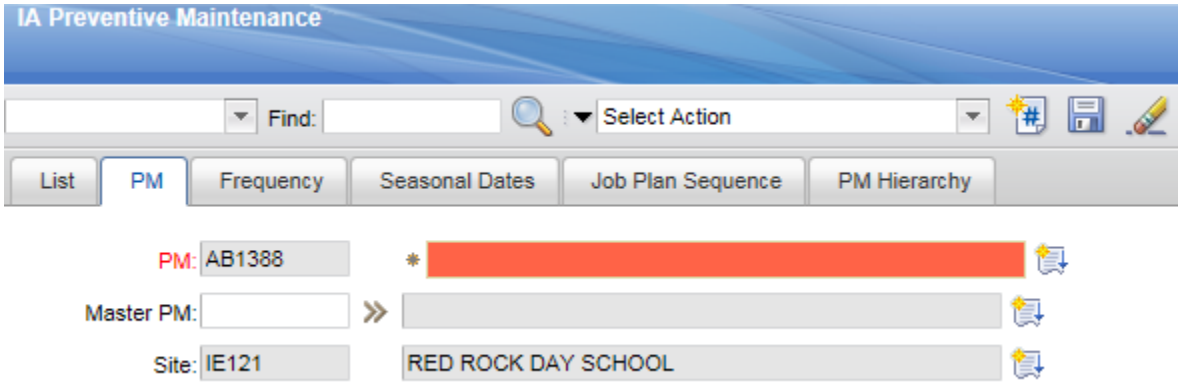
1. Navigate to the **IA Preventive Maintenance** application.



2. Click on the **New PM** icon located on the Toolbar

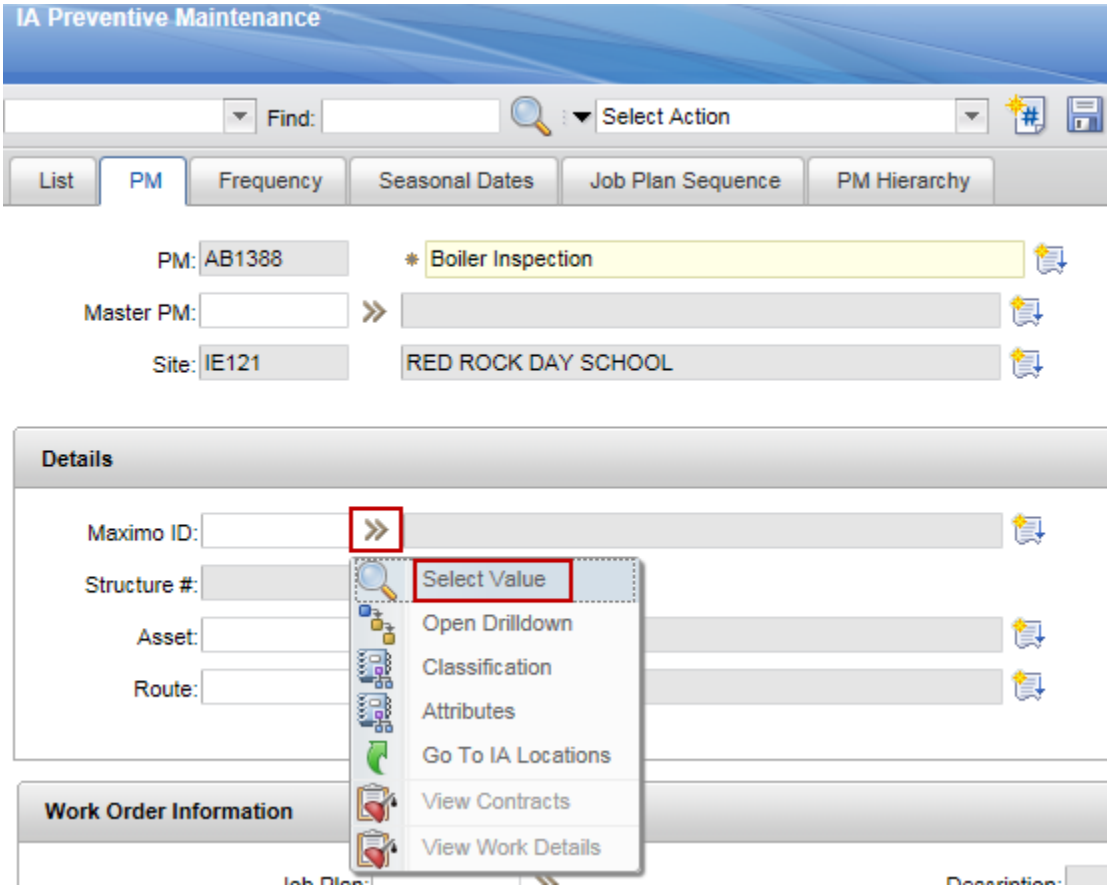


3. Enter a **Description** for the PM (as illustrated below).

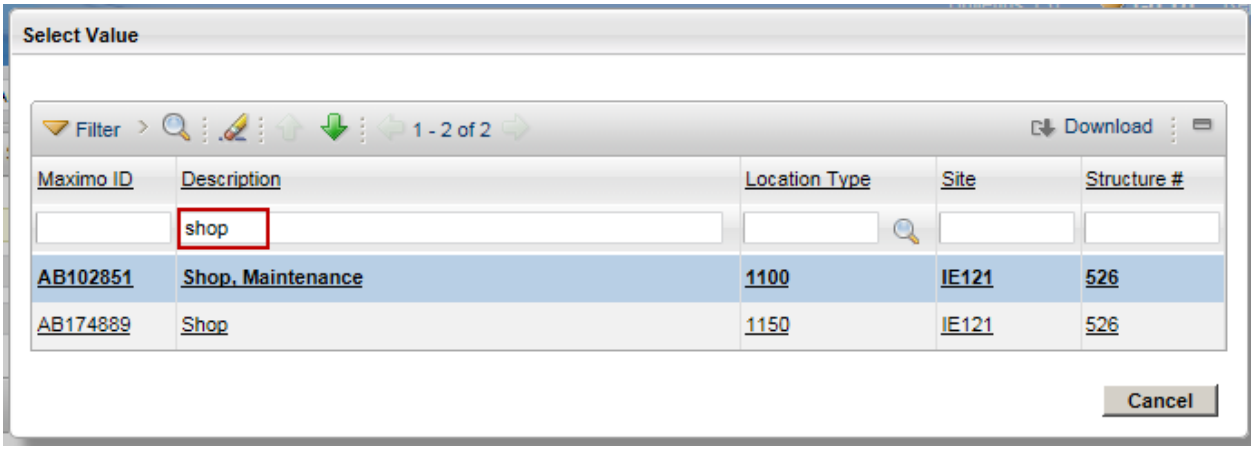


4. Make note of the auto-assigned unique PM Number: _____
(your number will differ from the one illustrated above).

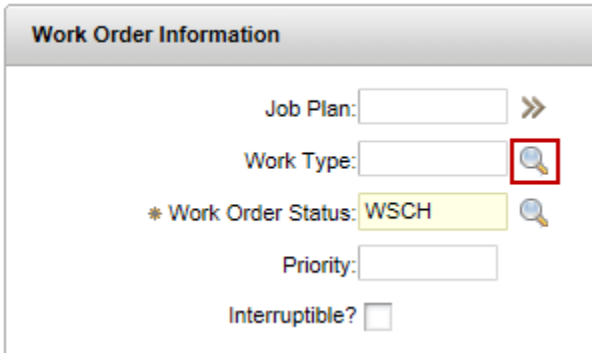
5. Select the asset for which the monthly service will be performed:
    a. Click the **Detail Menu** icon next to the **Maximo ID** field to display a list of options to choose from. Choose **Select Value** to display the asset list and make your selection.



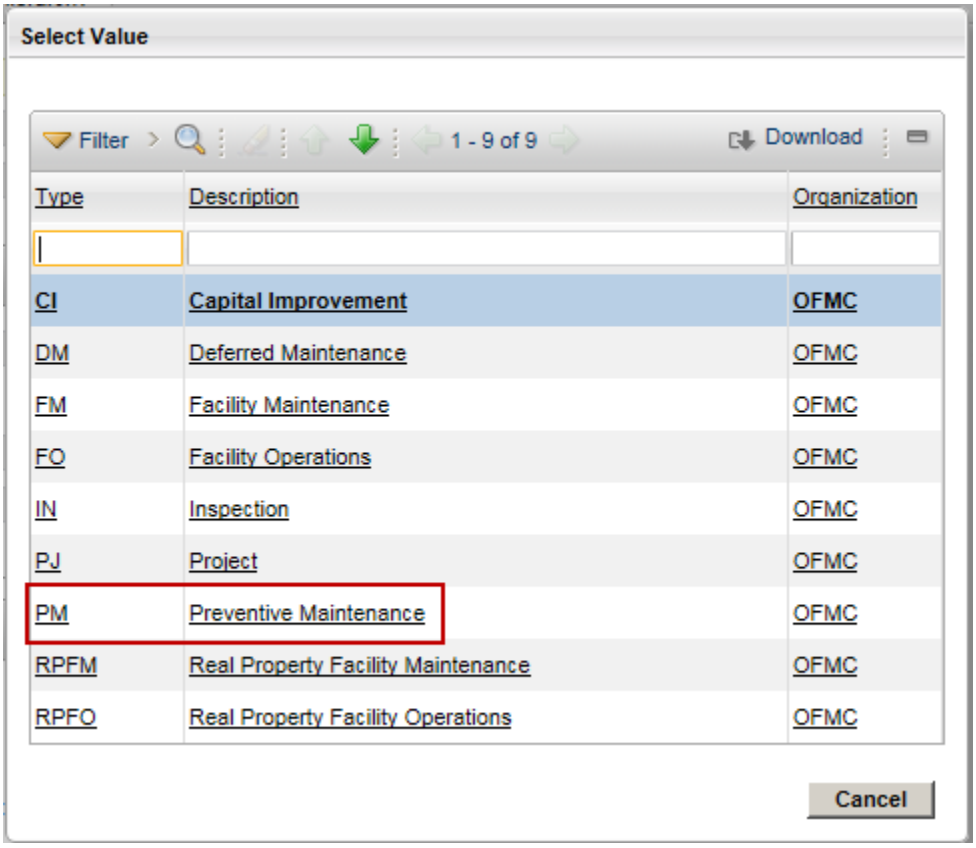
    b. The list will display the assets for the site to which you have access. Type “shop” into the **Description** field and hit enter.



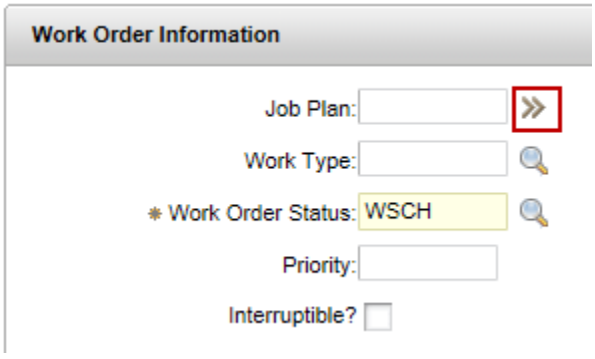
6. Select the correct **Work Type** for the work that is being performed.
    a. Click the **Select Value** icon next to the **Work Type** field to display a list of valid work types to choose from.



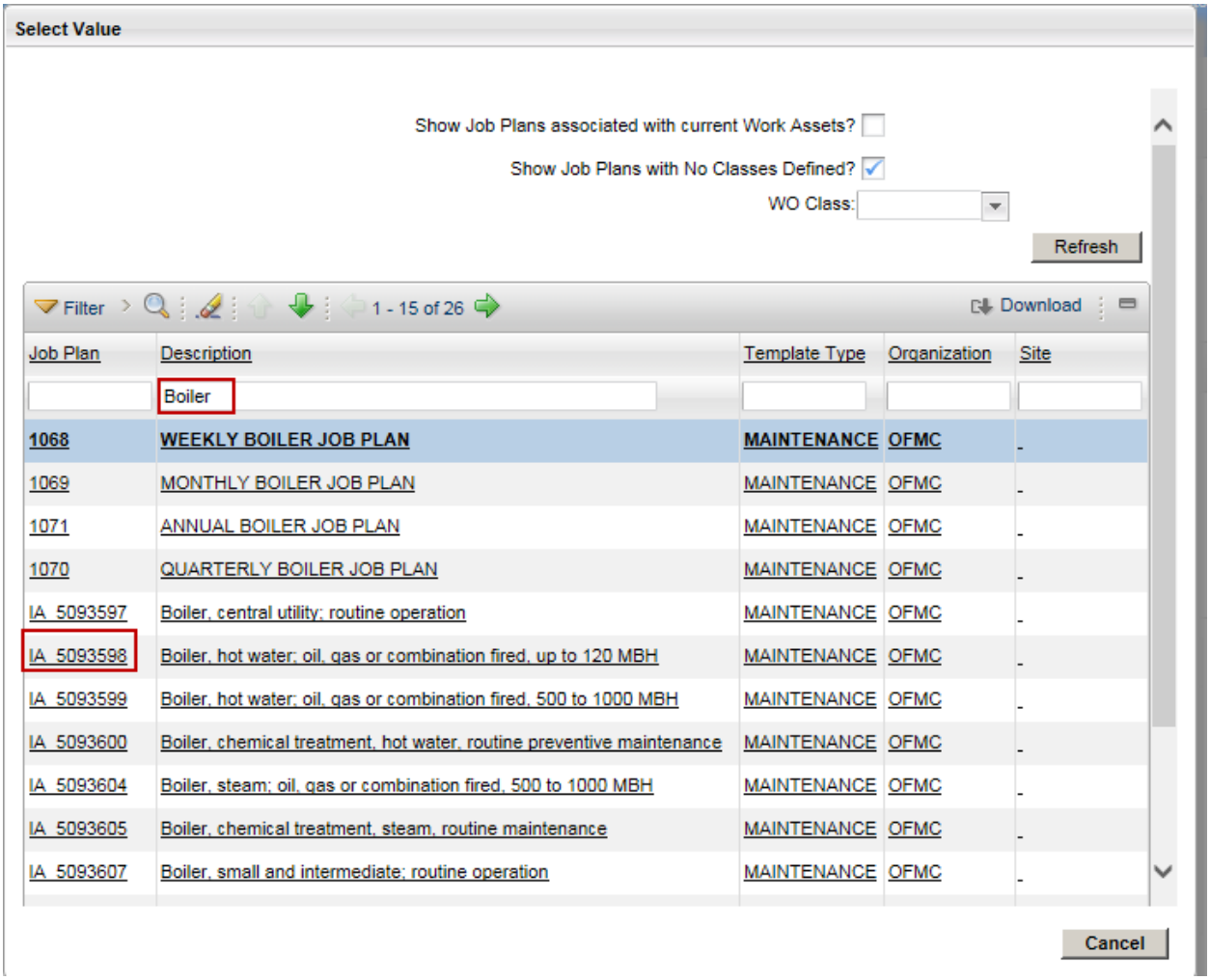
b. Select a **Work Type** value from the list. For this exercise, select "PM".



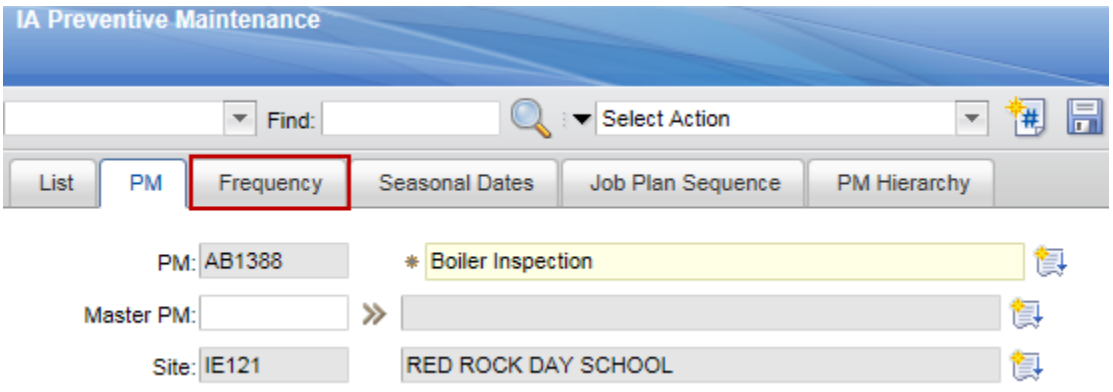
7. Select the appropriate **Job Plan** for the work.
   a. Click the **Detail Menu** icon » next to the **Job Plan** field to display a list of job plans to choose from.



b. Search for the Job Plan you will use by entering part of the job plan description in the **Description** field and pressing the enter key. Or, if you know the job plan number, type it in the **Job Plan Field** and press the enter key. Click on the **Job Plan** that you will associate with the PM record.



8. Save the PM by clicking the **Save** icon located on the Toolbar.
9. Select the **Frequency** tab.



10. On the **Time Based Frequency** sub-tab, enter the **Frequency** and **Frequency Units** for the PM Record. This will be the interval on which the PM will generate Work Orders. For this exercise, enter **1 Months** (since we are creating a monthly PM for the AC Package Unit asset).

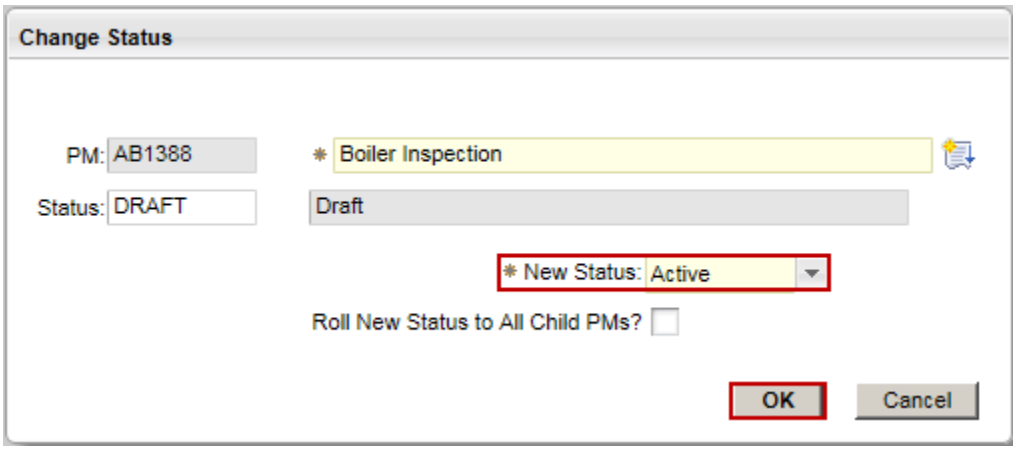
11. Enter the **Estimated Next Due Date** to indicate when the PM will begin. Since this is a new PM record, this is the *First Occurrence* date. Enter a date that is 5 days from today's date. Under actual work conditions, you will enter the date that corresponds to the actual date when you want to begin the PM work's first occurrence.

12. Save the PM by clicking the **Save** icon located on the Tool Bar.

13. Activate the PM by changing its status

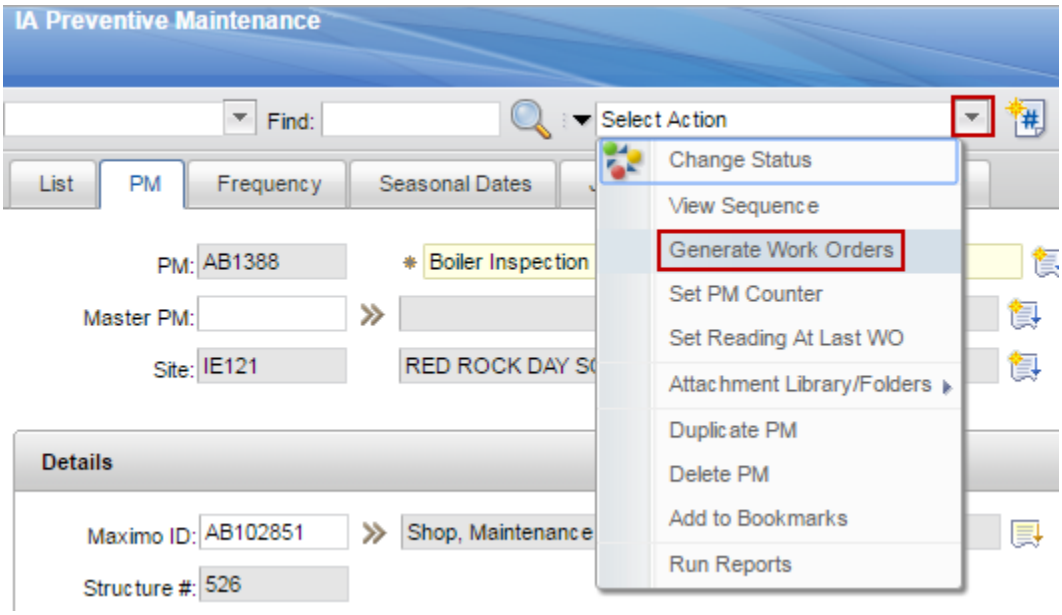
    a. Click on the **Change Status** icon located on the Tool Bar.

14. On the Change Status pop-up screen, select **Active** from the New Status select list.



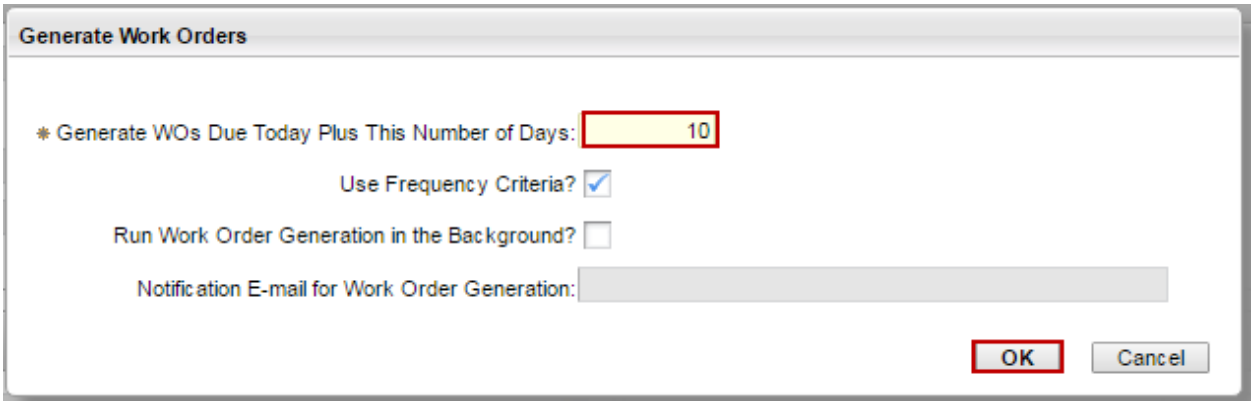
15. Click **OK**

16. Generate the Work Order for this PM by clicking on the **Select Action** menu and select **Generate Work Orders**.

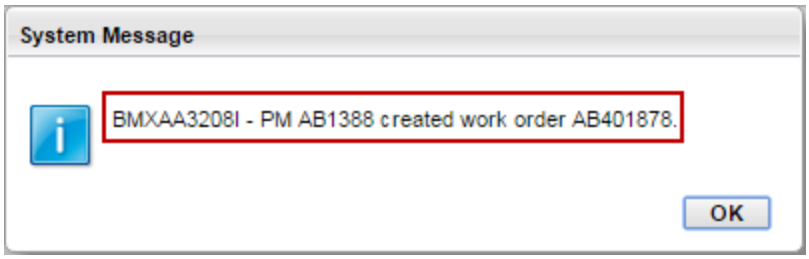


17. The system will display the **Generate Work Orders** dialog screen.

18. Enter the value of **10** in the **Generate WOs Due Today Plus This Number of Days** field. This tells the system to *look ahead 10 days* to find any PM records that are due. Remember the date you entered in Step 14 above was 5 days from today's date. By entering 10 on this step we are assured that Maximo will consider the current PM as being *due*.



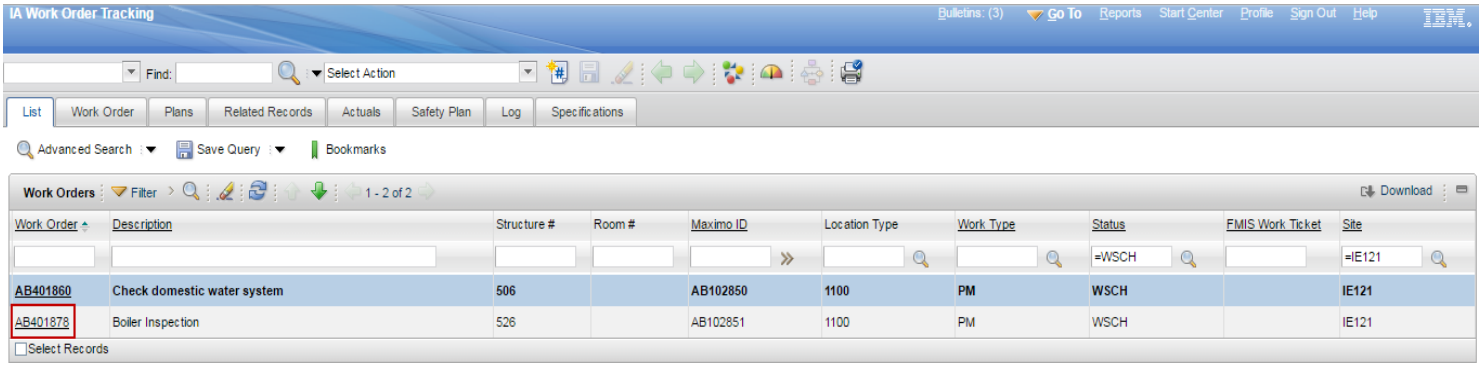
19. Click **OK** to begin the generation of work order(s).
20. The system will alert you with a message indicating the Work Order was successfully generated.



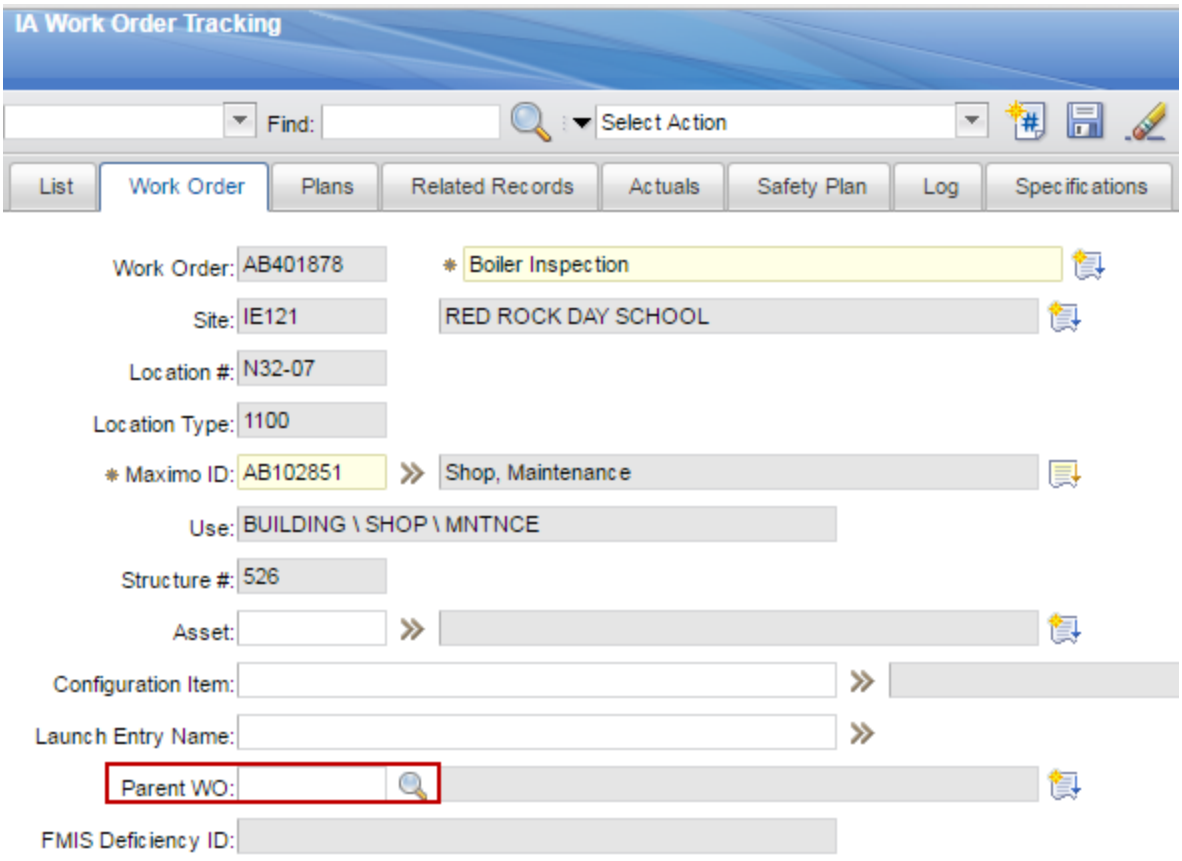
21. Write down the work order number you just created. Then click **OK** to dismiss the alert message.

    Work Order Number: _____

22. Navigate to the **IA Work Order Tracking** application and retrieve the new work order.
23. From the Work Order **List** tab, enter **'WSCH'** in the **Work Status** filter field and press the enter key. This will display all work orders recently generated from a PM record. (Or you could simply retrieve the work order by searching for its work order # in the Work Order field or by entering you initials in the Description field).

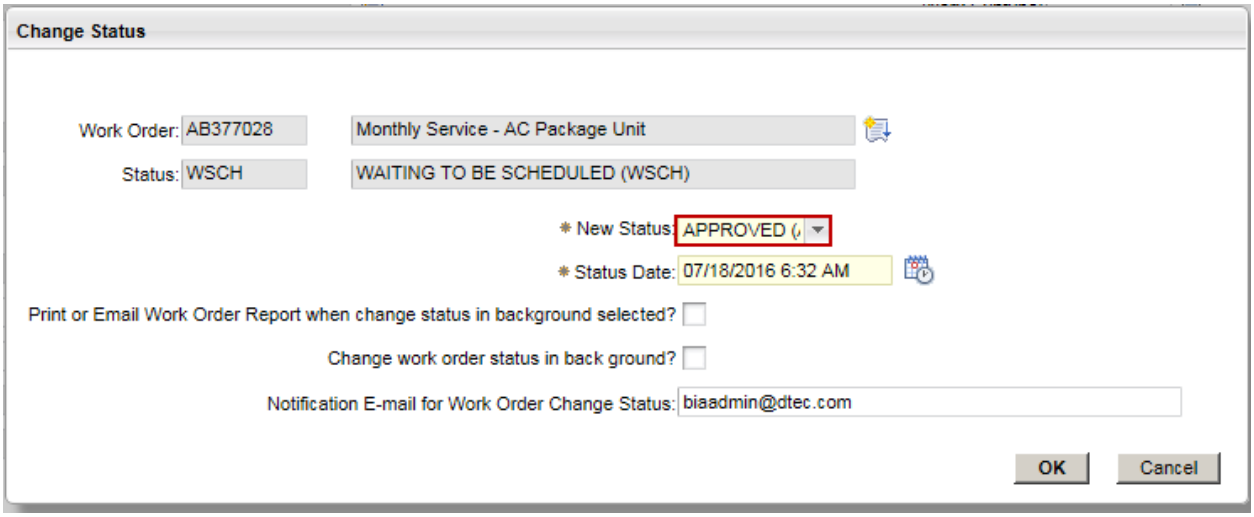


24. Select the Work Order by clicking on the **Work Order** number.
25. On the Work Order screen, select the correct **Parent Work Order** to which the work will be associated with (*remember, this is to ensure the work is accurately tracked against the correct FBMS budget category*)



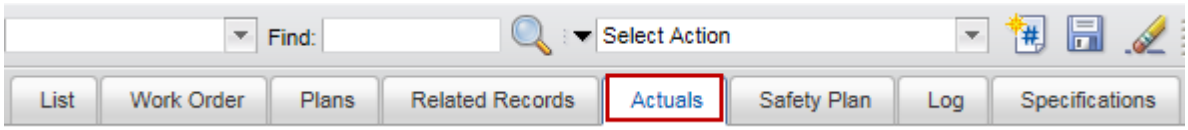
26. After selecting the **Parent Work Order**. Click on the **Save** icon .

27. Change the Status of the Work Order to **Approved** by clicking on the **Change Status** icon on the Tool Bar.
    a. From the Change Status dialog screen, select **APPROVED (APPR)** from the **New Status** select list.
    b. Then click **OK.**

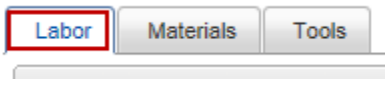


Click on the **Actuals** tab for this work order to complete the Monthly PM for the AC Package Unit.

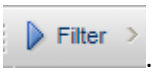
28. Select the **Actuals** tab.



29. Select the **Labor** sub-tab located at the bottom of the screen (already selected by default).



30. Click on the **Select Labor** button located on the lower-right side of the screen. This will display the list of People and related crafts to choose from.

31. From the list of available labor (people), select filter icon 

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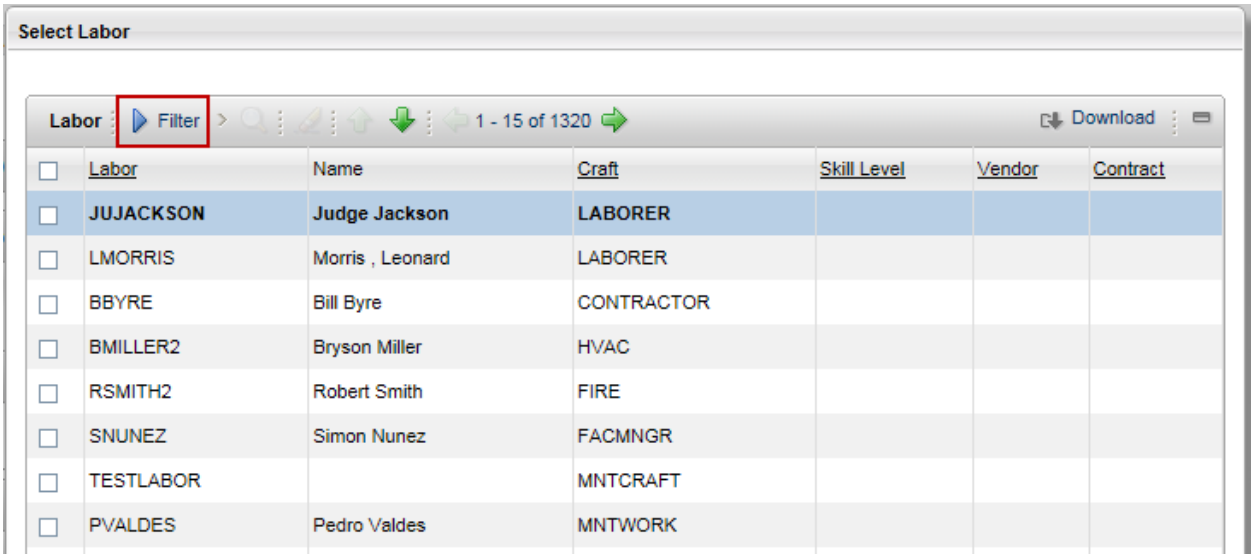
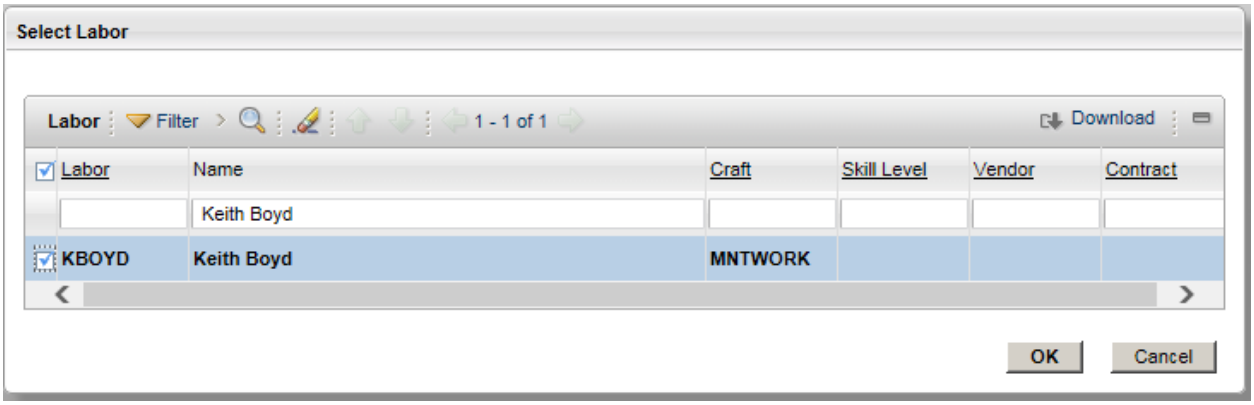
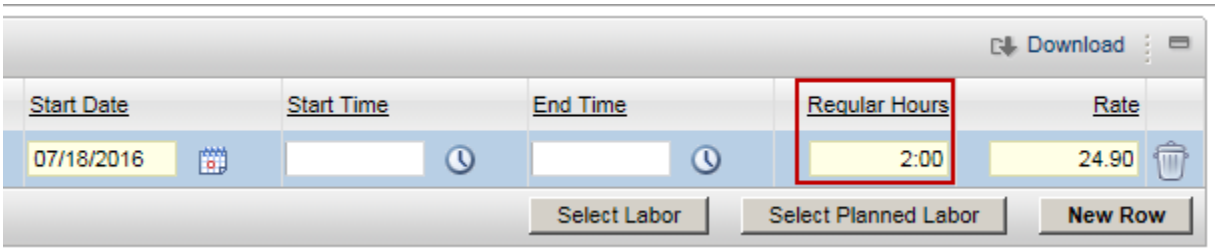


32. In the **Name** field type in: Keith Boyd. Then hit **Enter** on your key board. Check the box next to KBOYD.



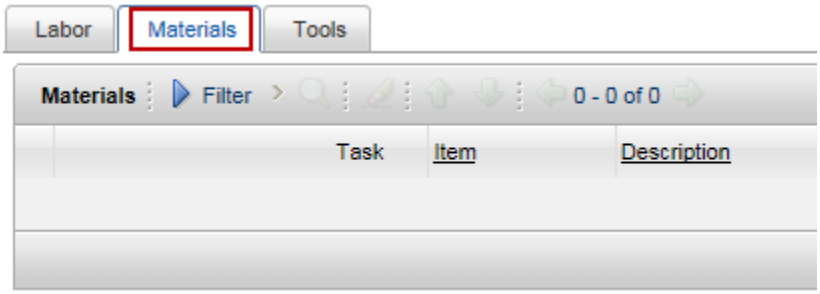
32. Click **OK**.

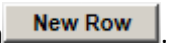
33. Enter the **Regular Hours** reported to complete the work. In the event that the actual hours were different from the planned hours, enter the value. For this exercise, enter: 2 hours.



34. Save the Work Order by clicking the **Save** icon located on the Toolbar.

35. Select the **Materials** sub-tab located at the bottom of the screen.



36. To select Materials click on the push button 

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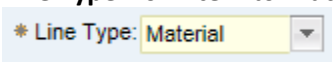
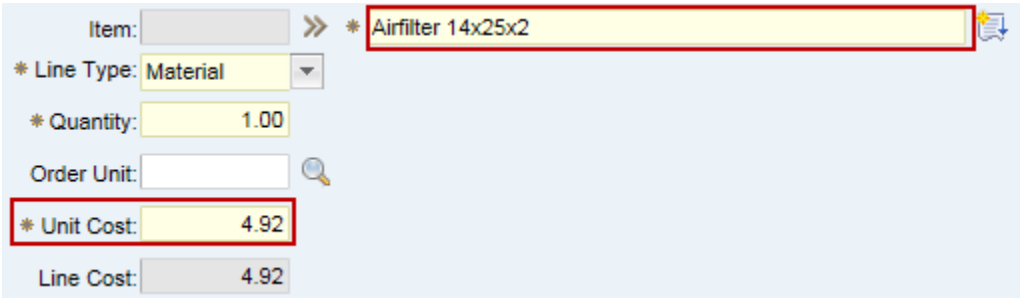
- Change **Line Type** from **Item** to **Material**



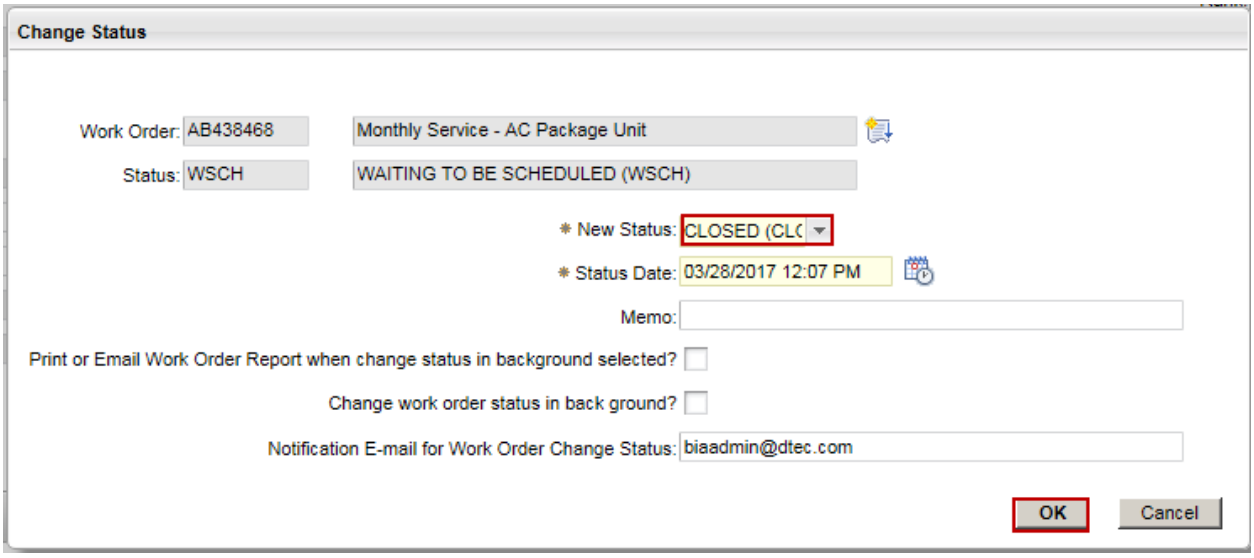
- For the Material **Description** enter: *Air Filter 14X25X2*
- Enter **Unit Cost**: 4.92



37. **Save** the Record.

38. Change the status of the work order to **CLOSE.** Click the **Change Status** icon on the Toolbar to display the **Change Status** pop-up screen.

    a. Select **CLOSE** from the **New Status** selection list.



39. Click **OK** to complete the Status change process.