

Chapter 6:

Work Tracking

Objectives

After completing this section, you will be able to:

- ☐ View / Update Work Orders
- ☐ Update Equipment Status
- ☐ Consume Inventory
- ☐ Complete a Work Order
- ☐ Set Up Scheduled Work Orders
- ☐ Complete a Work Order
- ☐ Set Up Work Order Templates with Steps Using Processes and Operations
- ☐ Use the Real Time Status and Asset Downtime Tools
- ☐ View Scheduled Activities and Work Orders from the Work Order Calendar
- ☐ Start / Edit / End Projects

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Work Tracking

The Work Tracking module tracks all aspects related to work performed on assets, from installing new equipment to issuing response or preventive maintenance work orders. Tracking and managing work requests, labor, planning, and scheduling allows organizations to make the most of their resources while improving productivity.

Equipment status can be modified to reflect current operational status during the maintenance or repair activity. The technician can also log comments about the procedure and the system will maintain a complete history of all transactions.

Prioritization of work can either be done by a maintenance dispatcher who determines the priority and assigns the technician, or the system automatically assigns the priority based on established criteria.

Items used in the maintenance activity, such as spare parts and supplies, are consumed from within the work order and automatically updated in the inventory management module for easy reordering. Since the use of labor, spare parts, and consumable inventory are tracked by TME, these items become part of the history of the Work Order and the total cost of labor and parts for the work order (and therefore the asset as well) can be calculated.

This module consists of eight submodules: Work Orders, Scheduled Work, Real Time Status, Calendar, Projects, Project Data, Operations and Processes.

The Work Order submodule provides the ability to create new work orders, assign them to personnel, and track their progress through completion. Equipment repairs or maintenance requests are tracked automatically to provide detailed reporting and work order history.

Scheduled Work helps define and maintain a consistent, verifiable, preventive maintenance (PM) schedule.

The Real Time Status submodule provides a visualization of the assets and their statuses while the Work Tracking Calendar submodule is a graphical tool for showing current Work Orders, completed Work Orders and Schedule Work that has been or is set to be triggered.

The Projects submodule is a means for tracking non-Work Order related tasks, meetings, projects, training, etc. Project Data allows for viewing/editing those records.

The Operations submodule provides the means to create and organize Work Order Steps into groupings. These groupings known as Operations can then be selected via the Processes Submodule onto one or more Processes to create Work Order templates.

How to Set Up a Work Order Template

TME contains four Work Order Templates inherent to the system. These are entirely sufficient for general use within Work Orders and Scheduled Work.

- **General (Revision 1):** Primary purpose is to serve as a simple default template for Manual Work orders created from within the Work Order viewer, usually by a Technician. It is also a good example of a simple template to also use with Scheduled Work. It does not have Steps and has almost all options (i.e., Logging Hours, Updating Equipment Status, Consuming Inventory, etc.) of a Work Order selected.
- **Repair Request (Revision 1):** Set up as a simple template with no Steps to be used as the default for all Repair Requests submitted by Users from the Dashboard. Most options of a Work Order have been selected.
- **Service Request (Revision 1):** Identical template as the Repair Request but for use with all Service Requests submitted by Users from the Dashboard. The reason for a separate template is that an Administrator may choose to require entry of Module/Failure/Corrective Action data on Repair Requests but not even have it available on Service Requests. Other differences may be set up as well.
- **Non-Equipment Request (Revision 1):** This template has been set up without steps and is designed for those requests not associated with an Asset submitted by Users from the Dashboard. It does not contain the option to change equipment status, i.e., Uptime to Downtime.

However, alternate templates (or versions of the above) can be created and used in their place. Also, different templates can be created to serve as default Repair and Service Requests for individual Assets. See the Settings chapter for details on setting up the overall defaults and the Asset Management chapter for details on setting up the defaults for individual Assets.

Work Order Templates Using Processes and Operations

The basic organizational structure of a Work Order Template utilizes the concept of Operations set up as a flow within a Process. The chart below provides an example of a template showing the relationship between Processes, Operations and Steps:

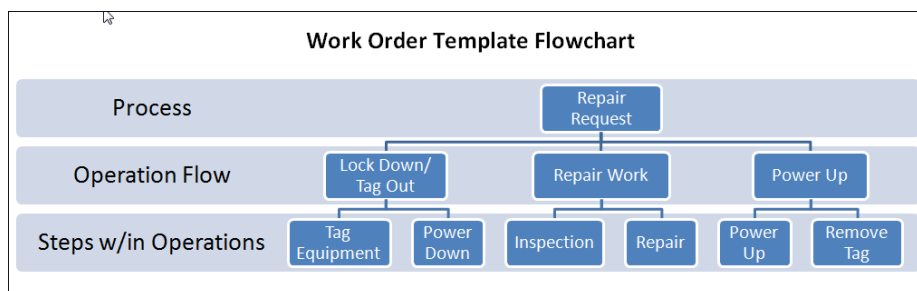


Figure 1 Work Order Template Flowchart

In this example, the Process is titled "Repair Request" and is set up in the Processes Module. It contains three Operations that are set up separately from the Process in the Operations module. These Operations are standalone items that can be included in any number of Processes. Each Operation contains Steps that can be set up with their own logic and rules.

The screenshot shows the 'Process Detail Screen' for a process titled 'Repair Request'. The interface includes a menu bar with 'File', 'Actions', and 'Help'. Below the menu bar is a toolbar with icons for 'Save and Close', 'Add', and 'Help'. The main content area is titled 'Revision: 1' and contains a 'Details' section with a sidebar on the left. The sidebar lists various categories: Information, Operation Flow, Notification, Associations, Documents, BOM Items, Auto Set Attributes, Attribute Setup, and Collection Setup. The main area displays the following fields and options:

- Revision:** 1
- Active:** ☒
- Default Desc:** [Empty text field]
- Run Out Of Order:** ☐
- Category:** [Dropdown menu]
- Type:** Other [Dropdown menu]
- SubCategory:** [Dropdown menu]
- Plan:** [Dropdown menu]
- Default Priority:** High [Dropdown menu]
- Default Due Days:** 1 [Text field]
- Print Label:** Work Order with History [Dropdown menu]
- Default Est. Hours:** 0 [Text field]
- Work To Be Done:** [Text area]

Below these fields are two columns of checkboxes for various actions and settings:

- ☐ Check All
- ☒ Log Comments
- ☒ Consume Inventory
- ☒ Return Inventory
- ☒ Log Hours
- ☒ Must Log Hours
- ☐ Auto Start
- ☒ Reject
- ☒ Show Supplier Dependent Failure
- ☒ Req. Supplier Dependent Failure
- ☒ Show Mod/Fail/Corr Act
- ☒ Req. Mod/Fail/Corr Act
- ☐ Req. Data Collection
- ☐ Auto Generate New Work Order
- ☐ Default Due Hours (Overrides Default Due Days above)
- ☐ Check All
- ☒ Change Asset Status
- ☒ St. NonScheduled
- ☒ St. Uptime Engineering
- ☒ St. Uptime Production
- ☒ St. Uptime Stand By
- ☒ St. Down Out Of Spec Input
- ☒ St. Down Prev. Maint.
- ☒ St. Down Prod Test
- ☒ St. Down Repair
- ☒ St. Down Repair Req.
- ☒ St. Down Sch. Complete
- ☒ St. Down Sch. Consumables
- ☒ St. Down Sch. Facilities
- ☒ St. Down Sch. Maint. Delay Supplier
- ☒ St. Down Sch. Maint. Delay User
- ☒ St. Down Setup

Figure 2 Process Detail Screen

In addition to setting up the Operation Flow and the Actions that can be taken against a Work Order (Consume Inventory, Log Hours, etc.), the Process also defines what Documents, Bill of Materials, and Notifications are available for the Work Order. See the Processes section of this chapter for more information.

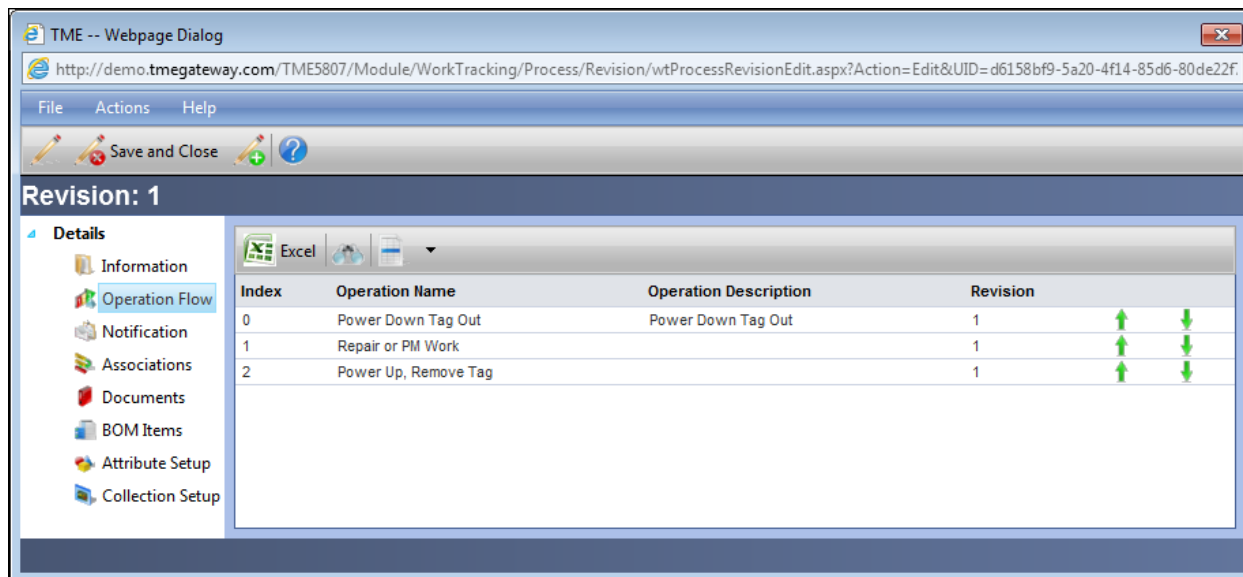


Figure 3 Operation Flow

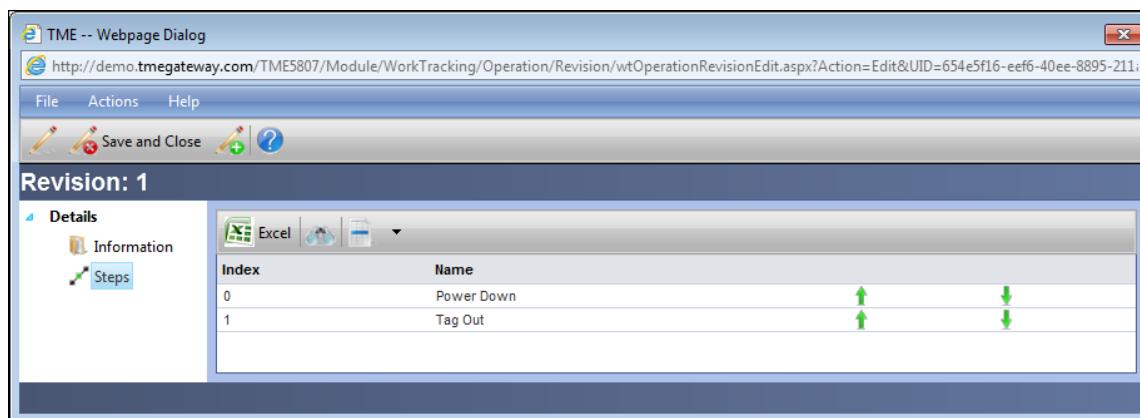


Figure 4 Steps within an Operation

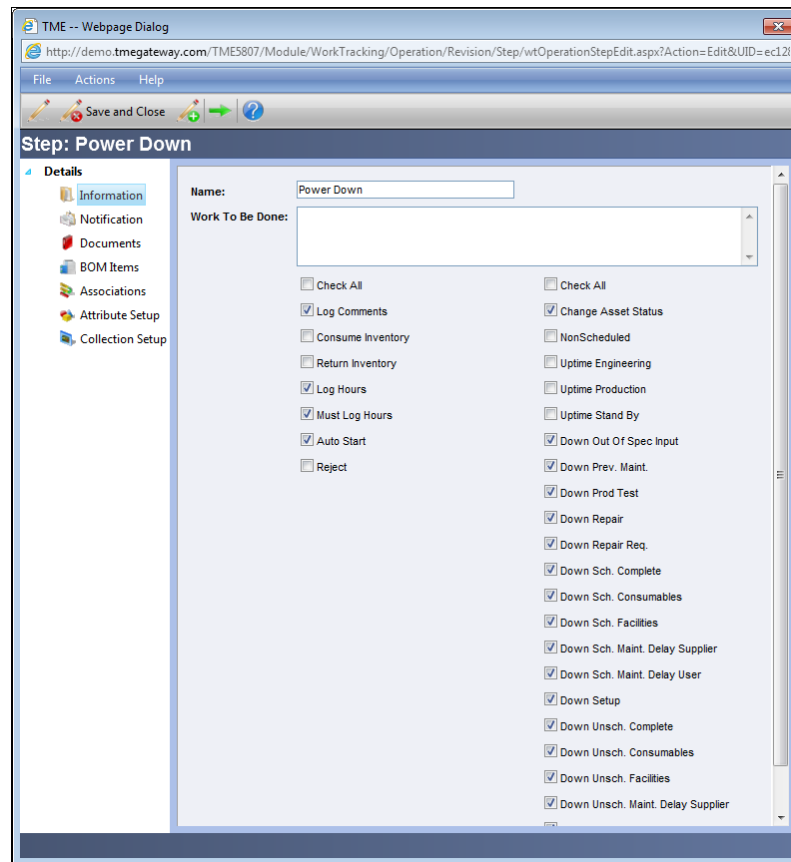


Figure 5 Step Detail Screen

As the Process is the template for the overall work order itself by providing Actions, Documents, Bill of Materials, Notifications, etc., the Steps can have those items set up as well. Consider it a Work Order within a Work Order. Each Step can have its own set of Documents, its own Work To Be Done, its own Inventory consumed, Attributes, Data Collection, etc. As such, each Step can be Assigned to a different User or Group and can also be associated with a different Asset than that of the Work Order itself.

An example of the use of multiple steps associated with different Assets within a single work order is the case whereby a small line of Assets need to have preventive maintenance work. Asset 1 needs to be powered down, Asset 2 gets the oil change (and the consumption of oil charged against it), Asset 3 requires a belt inspection and Asset 1 needs to be powered up again. All three Assets will need to have the equipment status updated (Downtime/Uptime), but only Asset 2 might need Inventory consumed. Four steps within the Work Order will provide all of the tools needed to properly and accurately document what is considered a single PM.

A Process may also be set up without Operations and thus have no individual Steps--just the settings and rules set for the Process and whatever has been entered into the Work To Be Done Field. These settings will apply to any Work Order generated off of this Process.

Work Orders

The Work Order (WO) viewer lists the Work Orders requested by operator and maintenance technicians. These include Repair Requests (requested by Operators via the Operations control or by Users via the Real Time Status screen within the Work Tracking module), Scheduled Work (triggered manually or automatically by the TME Runtime Engine based on a schedule set up in the Scheduled Work submodule), and Manual Work Orders (miscellaneous work orders submitted by maintenance technicians directly from the WO viewer).

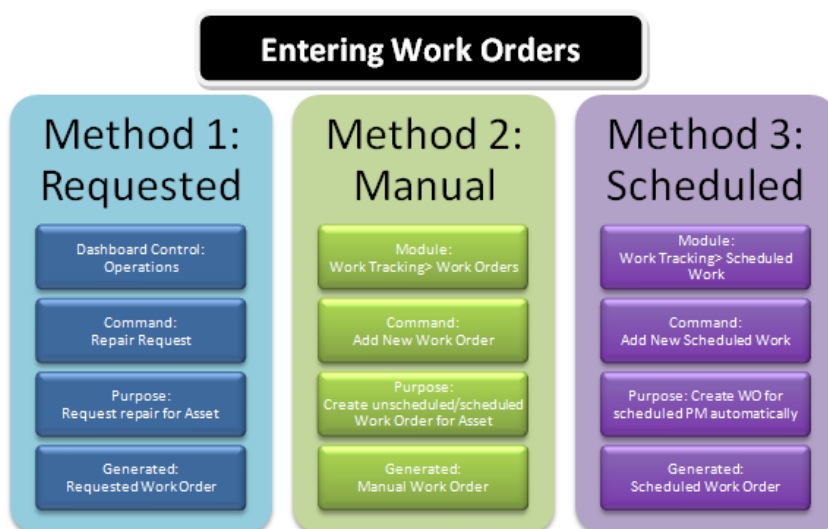


Figure 6 Methods for Requesting Work

The Work Order viewer can be accessed via Go To from the Task Bar or from the Inventory Module within a Menu Group.

TME - Windows Internet Explorer
http://demo.tmegateway.com/tme5807/Main.aspx

File New Go To Tools Help

Workspace **Work Orders** User: Admin

Scan Work Order ID:

ID	Asset ID	Asset Status	Description	Assigned To	Priority	State	Due Date	Category	SubCategory	Plan	Gen	Process
59370	100	UpTime Production	Default Work		High	PastDue	11/28/2012				Requested	Service Request (1)
59369	D001	DownTime RepairRequest	Default Work	Gamal Balady	Medium	PastDue	9/29/2012	Die Change			Manual	General (1)
59368			Vehicle Service Request		High	PastDue	9/25/2012	Fleet	AB-89-K		Manual	Vehicle Service Request.Copy (1)
59367			Vehicle Service Request		High	PastDue	9/25/2012	Fleet	AB-89-K		Manual	Vehicle Service Request (1)
59366	100	UpTime Production	Vehicle Service Request-Let Gene Know You Got This Email as Requestor		High	PastDue	9/24/2012	Fleet	AB-89-K		Manual	Vehicle Service Request (1)
59364	100001	UpTime Production	Default Work	Brian Turner	Medium	PastDue	9/25/2012	Scheduled			Manual	General (1)
59363	100	UpTime Production	Default Work	Brian Turner	Medium	PastDue	9/22/2012				Manual	General (1)
59361			Default Work		Medium	PastDue	7/30/2012				Manual	General (1)
59360	FSC-01	UpTime Production	fdfadf		High	PastDue	8/15/2012				Requested	Service Request (1)
59359	TEST01	UpTime StandBy	Default Work	Kyle Sawyer	Medium	PastDue	7/30/2012				Scheduled	General (1)

Figure 7 Work Order Viewer

Exercise 1:



Add two manual Work Orders.




1. Go to Work Tracking > Work Orders
2. Click on  New.

Figure 8 Work Order Detail screen

3. The default Process for all Manual Work Orders is already populated. Select an alternate Process for the work order by clicking on the  icon. The Process Revision LookUp screen will appear. Only those Processes that are active will be available. To drill into the detail screen of a Process, double-click on the row. To select the Process, click on its  icon. Once selected, it populates the Process field as a link. Clicking on the link will open the Process Detail Screen.
4. Enter/select information for all the applicable fields.
 - a. The Description may be overwritten
 - b. Select the Priority
 - c. Type, Category and SubCategory are populated by the Process and can be edited as appropriate.
 - d. Work Orders can be assigned to either a User or a Group. Choose by selecting either User or Group for the Assign Type. Once selected, the Assigned To drop down list will filter accordingly to either a list of Users or Access Groups. Select to whom the Work Order will be assigned (Note: not required, may be selected at a later time if there is a dispatch system)

- in place). If assigning to a Group, all members of the Group will receive any notifications sent out.
 - e. Select the Due Date
 - f. If applicable, check the checkbox for Planned Event and edit the Est Hours (estimated man hours to complete the work)
 - g. An alternate Requestor may be selected if he/she is not the logged in User (i.e., using a Dispatch system)
 - h. Select the Asset for which the work is to be completed, if non-equipment based, leave blank
 - i. The Locale will change to that of the Asset selected; User may change the Locale to reflect where the actual work is to take place
 - j. Type in the Work To Be Done
5. Save. The additional links will now be available when opening this record.
 6. The screen has changed and has added action items and links.
 7. Add at least two Documents and a BOM.
 8. Save/Close.

The screenshot displays the 'Work Order: 343' detail screen. The interface includes a top menu bar with 'File', 'Actions', and 'Help'. Below the menu is a toolbar with icons for 'Save and Close', 'Add', 'Delete', and 'Help'. The main content area is divided into a left sidebar and a right main panel. The sidebar contains a 'Details' section with links for 'Information', 'Steps', 'Documents', 'Inventory BOM', and 'Collection Data'. The main panel has two tabs: 'General' and 'Attributes'. The 'General' tab is active, showing the following fields:

- Process:** Process with Steps (2)
- Description:** Power fluctuating too rapidly
- Priority:** High
- Type:** Other
- Assign Type:** User (radio button), Group (radio button)
- Assigned To:** Technician
- Due Date:** 11/5/2015 2:25:39 PM
- Planned Event:** ☐
- Est. Hours:** 30
- Category:** Repair
- SubCategory:** Power
- Requestor:** Admin
- Request Date:** 11/3/2015 2:25:20 PM
- Asset ID:** 00K064
- Locale:** Main\Bldg 1\Floor 1\Room 101
- Work To Be Done:** Power fluctuating too rapidly--goes in spurts, calms down for a while and the starts fluctuating again. Been going on for over half an hour

Figure 9 Work Order Detail Screen with Information Filled In

Processing a Work Order

To open a Work Order, double-click on it or scan the Work Order ID in the Scan field at the top of the Viewer. The Work Order screen appears with the Edit Work Order, Print Work Order, Start Work (if Process does not have it set for Auto Start), Reject Work Order (if Process provides this feature), Generate PO and Collect Data links.

Work Order: 343 (Process with Steps (2))

Status:	Pending	Requestor:	Admin
Due Date:	11/5/2015 2:25:39 PM	Request Date:	11/3/2015
Priority:	High	Assigned To:	Technician
Type:	Other	Start Date:	
Cat/SubCat:	Repair/Power	Est. Hours:	30.0
Locale:	Main\Bldg 1\Floor 1\Room 101	Actual Hours:	0.0
Asset ID:	00K064 (DownTime OutOfSpecInput)	Inventory Cost:	\$0
Description:	Power fluctuating too rapidly		

Actions:

- [Edit Work Order](#)
- [Print Work Order](#)
- [Start Work](#)
- [Generate PO](#)
- [Collect Data](#)

Work To Be Done: Steps History Data Collections

Power fluctuating too rapidly--goes in spurts, calms down for a while and the starts fluctuating again. Been going on for over half an hour

Help OK

Figure 10 Opened Work Order Prior to Start

- **Edit Work Order:** Click on the Edit Work Order link. The Work Order Details screen appears. Make any edits as necessary such as changing the Due Date or who the Work Order is assigned to and Save/Close.
- **Print Work Order:** The TME Administrator can set up a form for printed Work Orders that provides just the information or also a place for documenting work. To print, click on Print Work Order.
- **Start Work Order (may be disabled by Administrator):** The first step prior to doing any work on the Work Order is to Start Work. This allows the system to calculate the time from the start of the work to the closing of the work order as opposed to just the time from request to close. Open the Work Order and click on the Start Work link. The Start Work and Reject Work Order links will be replaced with Action links: Log Comment, Update Asset Status, Consume Inventory, Log Hours, and Close Work Order. If the Start Work function has been disabled by the Administrator, then the Action links will appear from the start and the links for Start Work and Reject the Work Order will not be available.

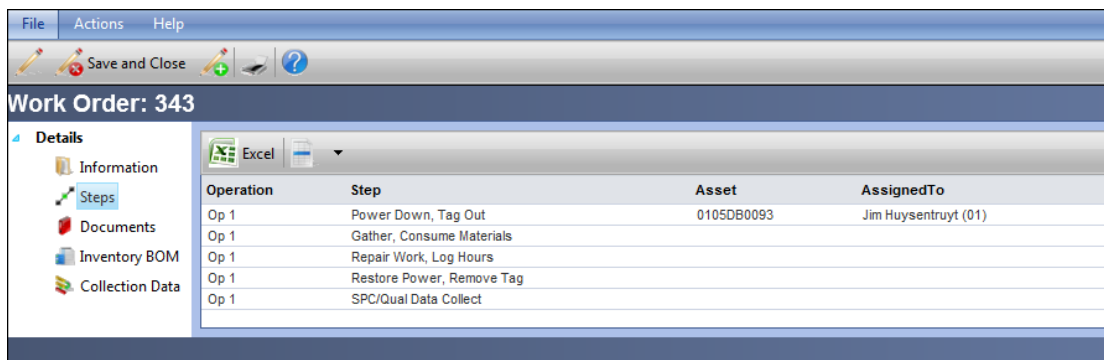
- **Reject Work Order:** Work Orders can't be deleted; however, they can be rejected prior to start of work (if the Auto Start option is set, then the Work Order will automatically start upon creation and the Reject Work Order link will not be available). Open the Work Order and click on the "Reject Work Order link." Type in comments such as the reason why the Work Order is being rejected and click on the Reject Work button. The links will change to show only Edit Work Order, Print Work Order and Reopen Work Order.
- **Reopen Work Order:** Once a Work Order has been closed or rejected, the Reopen Work Order link appears. The Work Order can be reopened if additional items need to be logged or if additional work needs to be completed. Once the Reopen Work Order link is clicked, it will be replaced with the Action links.
- **Generate PO:** User can create a Purchase Order straight from the Work Order for which it is be associated. Once a PO has been generated, the link will change to Update PO.
- **Collect Data:** User can collect multi-instance data such as measurement information, documents, etc.

Edit a Work Order

Open the Work Order and click on Edit Work Order. The Work Order Detail screen appears set to the Information Screen. Edit accordingly or click on any of the Additional Links to make changes.

Steps Link

There are numerous reasons why a Work Order can benefit from having multiple Steps, basically having a Work Order within a Work Order. These **Steps are all predefined as part of the Operations/Processes workflow and cannot be added directly to a Work Order.**



The screenshot shows a software interface for editing a work order. The title bar indicates 'Work Order: 343'. On the left is a sidebar with navigation links: Information, Steps (selected), Documents, Inventory BOM, and Collection Data. The main area displays a table of steps. Above the table are icons for Excel and a printer. The table has four columns: Operation, Step, Asset, and AssignedTo.


Operation	Step	Asset	AssignedTo
Op 1	Power Down, Tag Out	0105DB0093	Jim Huysentruyt (01)
Op 1	Gather, Consume Materials		
Op 1	Repair Work, Log Hours		
Op 1	Restore Power, Remove Tag		
Op 1	SPC/Qual Data Collect		

Figure 11 Edit Work Order Step Viewer Screen

- A Step can be assigned to a specific User or Group.

- A Step can be associated with an Asset other than that of the Work Order. Each Asset could therefore have an Update Asset Status link, logging of hours, ability to consume inventory, etc. This could be for the purpose of merely being able to create a Work Order for multiple Assets for the same type of work or to create a Work Order for a group of Assets that must have different tasks and measures taken to accomplish a job.
- Each Step can contain its own Documents, Bill of Materials and Work To Be Done as well as the same Actions links (except for Generate/Update Purchase Order) of the parent Work Order.
- Steps can be setup to be required or optional as well as directed to be worked in order, any order or with prerequisite steps.

To assign a Step to a User or Group other than that of the Work Order itself, double-click on the record to open the Operation - Step screen. Select either User or Group for the Assign Type. Once selected, the Assigned To drop down list will filter accordingly to either a list of Users or Access Groups. Select to whom the Step will be assigned (Note: not required, may be selected at a later time if there is a dispatch system in place). If assigning to a Group, all members of the Group will receive any notifications that may have been set up for the Step.

To associate an Asset to the Step, click on the  icon to the right of the Asset field and select the Asset.

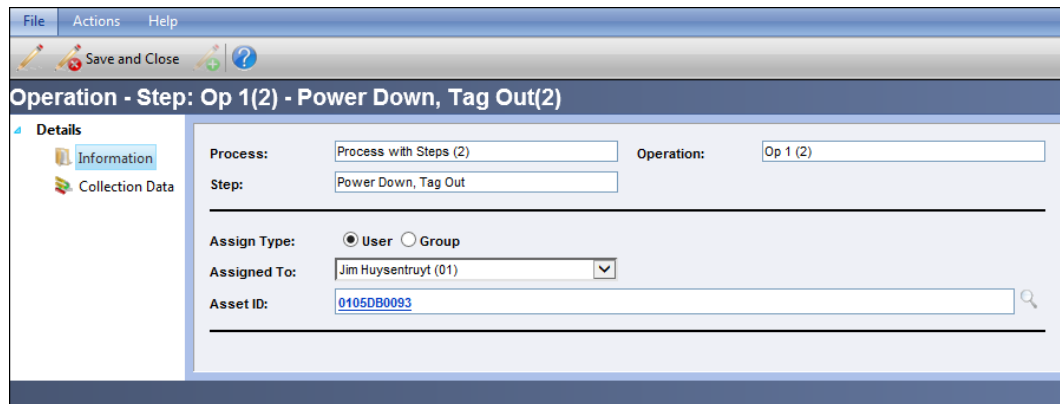


Figure 12 Work Order Step Association to Asset and Assigned To

The Asset and/or AssignedTo fields will populate the columns on the Steps Viewer accordingly. The Collection Data link is for viewing data collected within the Step. The Steps tab on the Work Order will display the Steps for processing.

Documents Link

Documents such as warranty information, pictures, videos, etc., may be attached a Work Order (directly or via a Process or Scheduled Work) and/or Work Order Step. To set up the Documents, click on the Documents link on the Item Detail Screen. The Documents must have already been uploaded into the Documents module and cannot be uploaded directly from the User's computer or a server.

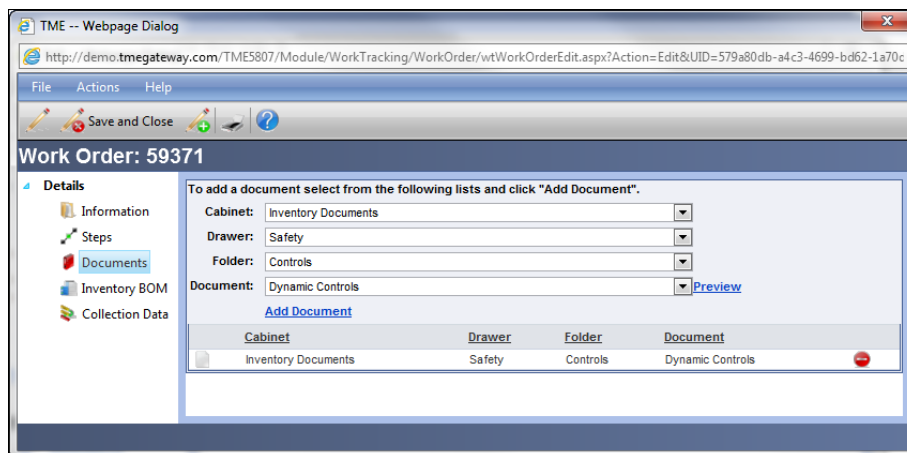


Figure 13 Work Order Documents Screen

Documents attached to Scheduled Work or Process or directly to the Work Order will be on the Documents tab of each Work Order that is triggered off of it.

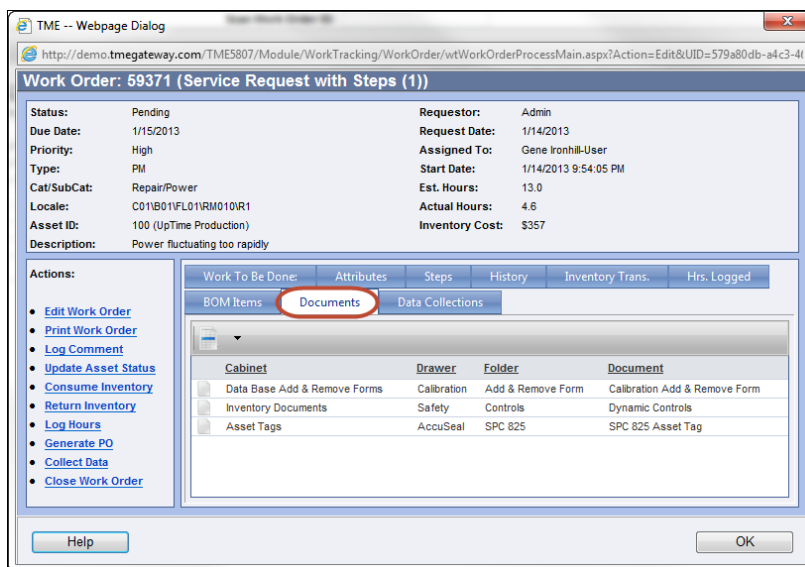




Figure 14 Work Order Documents Tab

Inventory BOM Link

A Bill of Materials (BOM) is used to group inventory items with a specific quantity onto a list that is then attached to a Work Order or Scheduled Work. BOM's may be set up with Inventory Items that are typically consumed for a specific preventive maintenance,

type of repair or within an Inventory Kit that is used to make a product. It can also be set up to simply be a list of the spare parts and the quantities used for an Asset overall.

To attach a BOM to a Work Order, click on the Inventory BOM link.

To search for a BOM, type in the name (or partial) of the BOM in the blank field and click on the Find button. The list of BOM's will populate with the BOMs accordingly. Select the BOM (click Ctrl on the keyboard and select additional BOM's to make multiple selections) and click on  icon. The BOM(s) will be listed in the Associated BOM's field. To remove a BOM from the Associated BOM's field, select the BOM(s) and click on the  icon.

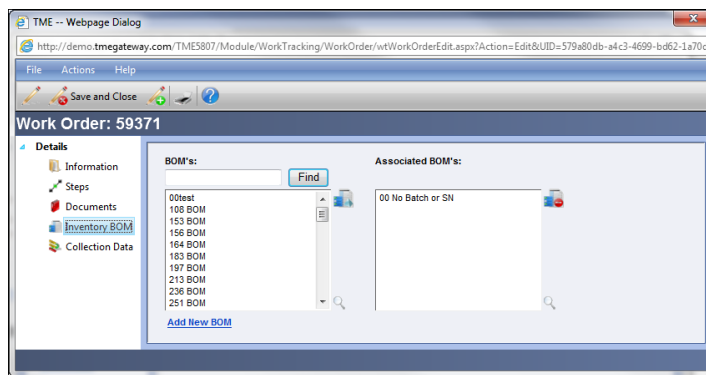



Figure 15 Work Order Inventory BOM Screen

To view the BOM to verify that it is the one to be attached, select the BOM and click on the  icon. The BOM Details screen will appear. Click on the BOM Items additional link to view the inventory items associated with the BOM.

To add a new BOM for selection, click on the Add New BOM link. See the BOM portion of the Inventory chapter for assistance setting it up. Once the new BOM is saved, it will be added to the list of BOM's and available for selection.

BOMs attached to Scheduled Work, Process or directly to the Work Order will be on the BOM Items tab of each Work Order that is triggered off of it.

Work Order: 59371 (Service Request with Steps (1))

Status: Pending Requestor: Admin
 Due Date: 1/15/2013 Request Date: 1/14/2013
 Priority: High Assigned To: Gene Ironhill-User
 Type: PM Start Date: 1/14/2013 9:54:05 PM
 Cat/SubCat: Repair/Power Est. Hours: 13.0
 Locale: C01\B01\FL01\RM010\IR1 Actual Hours: 4.8
 Asset ID: 100 (UpTime Production) Inventory Cost: \$357
 Description: Power fluctuating too rapidly

Actions:

- Edit Work Order
- Print Work Order
- Log Comment
- Update Asset Status
- Consume Inventory
- Return Inventory
- Log Hours
- Generate PO
- Collect Data
- Close Work Order

Work To Be Done: BOM Items Documents Data Collections

Index	Item Name	Description	Quantity	Units
1	50um 10"	50um 10" Water Filter	2	EA
2	Accu-Seal 1 1/2" Pressure Bar Teflon 108ft	Metrology Accu-Seal Bag Sealer 612-0033 1 1/2" Pressure Bar Teflon 108ft	1	Roll
3	HP c3906a	HP c3906a - Black	3	EA
4	Nano 9300 UV lamp	Nanometric 9300 (deuterium) UV lamp (with timer & connector) P/N# 9400-0077	2	EA
5	Veeco Probe Tips	Veeco nano-probe Tips, Model #TESPD, Wafer # 25358, length 125, freq. 292-351 khz	1	ea

Help OK

Figure 16 Work Order BOM Items Tab

Collection Data Link

The Collection Data link is for viewing the data that has been collected for the entire Work Order. Double-click on the record in question to open the detail screen and review/edit the data. If the data is edited, the Modified By and Modified Date fields will update accordingly. The original data will not be stored.

Work Order: 59371

Submitted: 1/14/2013 09:57:26 PM Collection: Documentation User: Admin
 1/14/2013 09:56:55 PM Power Measurements User: Admin

Collection Data

Work Order: 59371 - Collection: Power Measurements

Created On: 1/14/2013 9:56:55 PM Created By: Admin
 Modified On: 1/14/2013 9:56:55 PM Modified By: Admin

Temperature: 26
 Wattage: 56.6
 Voltage: 3
 Ohms: 42.6

Help Submit

Figure 17 Edit Work Order Collection Data Screen

Processing a Work Order

All actions taken against a Work Order (including editing the Work Order) are documented in the Work Order History tab. Additionally, separate tabs are added for Steps, Hours Logged, Inventory Trans (Transaction), BOM Items, Documents and Data Collections.

The screenshot shows a web browser window titled "TME -- Webpage Dialog" with the URL <http://demo.tmegateway.com/TME5807/Module/WorkTracking/WorkOrder/wtWorkOrderProcessMain.aspx?Action=Edit&UID=579a80db-a4c3-4f>. The main content area is titled "Work Order: 59371 (Service Request with Steps (1))". It displays a table of work order details:

Status:	Pending	Requestor:	Admin
Due Date:	1/15/2013	Request Date:	1/14/2013
Priority:	High	Assigned To:	Gene Ironhill-User
Type:	PM	Start Date:	1/14/2013 9:54:05 PM
Cat/SubCat:	Repair/Power	Est. Hours:	13.0
Locale:	C01\B01\VL01\RM010\IR1	Actual Hours:	0.0
Asset ID:	100 (UpTime Production)	Inventory Cost:	\$0
Description:	Power fluctuating too rapidly		

Below the table, there are tabs for "Work To Be Done:", "Attributes", "Steps", "History", "BOM Items", and "Documents". The "Work To Be Done:" tab is selected, showing a text area with the description: "Power fluctuating too rapidly--goes in spurts, calms down for a while and then starts fluctuating again. Been going on for over a half hour." To the left of the text area is a list of actions: "Edit Work Order", "Print Work Order", "Log Comment", "Update Asset Status", "Consume Inventory", "Return Inventory", "Log Hours", "Generate PO", "Collect Data", and "Close Work Order". At the bottom of the dialog are "Help" and "OK" buttons.

Figure 18 Work Order that Has Been Started

Once a Work Order has been started, additional links are available for processing the Work Order:

- **Log Comments:** To log a comment on the work being done or how it is proceeding.

The screenshot shows a web browser window titled "TME -- Webpage Dialog" with the URL <http://demo.tmegateway.com/Gamal50010/Module/WorkTracking/WorkOrder/wtWorkOrderProcessMain.aspx?Action=Edit&UID=579a80db-a4c3-4f>. The main content area is titled "Log Comments to Work Order". It displays a text area with the comment: "Ran the pressure test once and was unable to determine the source of the leak. Will run again." Below the text area is an "OK" button. At the bottom of the dialog is a status bar showing "http://demo.tmeg Internet | Protected Mode: On".

Figure 19 Log Comments Screen

- **Update Asset Status:** Any time the status of an asset changes during the course of doing work, i.e., from Downtime Repair Request to Downtime Repair, it must be documented against the Work Order. Click on Update Asset Status, select the Major and Minor statuses from the drop down list, type in the associated comments and click the OK. If provided, select from the Reason drop down list. Once submitted, the current status of the asset will be changed. The new status will be added as a line item to the History tab of the Work Order as well as the Status Log on the Asset detail screen. See Appendix 6 for the list and descriptions of statuses and metrics calculations.



Changing the statuses within a work order stops and starts “the clock” for logging hours worked by a User. The clock “starts” when the status is changed from an Uptime, NonScheduled or non-active Downtime status to an active Downtime status such as Repair and is then stopped when the status is changed to a non-Active Downtime status such as Maintenance Delay User or to an Uptime or NonScheduled status. When the clock stops, the hours from start to stop are automatically logged for the User in the same manner as if the hours had been logged manually.

Figure 20 Update Asset Status Screen

- **Consume or Return Inventory:** These links allow the maintenance technician to consume or return Tracked or Non-Tracked inventory that is consumed/returned during the process of completing the work order. Tracked inventory refers to parts that have been entered into the TME Inventory module while Non-Tracked inventory refers to parts that might have been brought in by a supplier (outsourced) or for whatever reason simply aren't being tracked (i.e., one time purchase from a hardware store).

Tracked Inventory: Click on Consume or Return Inventory. The Consume (or Return) Item for Work Order screen will appear set to the Inventory Item tab (Tracked Inventory).




The screenshot shows a web browser window titled "TME -- Webpage Dialog" with the URL "http://demo.tmegateway.com/TME5403/Module/WorkTracking/WorkOrder/vtWorkOrderProcessConsumeInv.aspx?UID=367a6811-e9b7-47b1-ac". The main heading is "Consume Item For Work Order". Below this are two tabs: "Inventory Item" (selected) and "Non-Tracked Item". The form includes the following fields and controls:

- Scan Barcode:** An empty text input field.
- Inventory Item:** A text input field containing "20um 10" with a magnifying glass icon to its right.
- Batch:** A text input field containing "4444" with a magnifying glass icon to its right.
- Serial Number:** An empty text input field with a magnifying glass icon to its right.
- Consume From:** A text input field containing "C01B02FL02RM020" with a magnifying glass icon to its right.
- Available Qty:** A text input field containing "2.0000000".
- Trans. Qty:** A text input field containing "0" and a dropdown menu set to "EA".
- Comments:** A text area with a small icon to its right.
- Buttons:** An "Add" button next to the Comments field and a "Submit" button at the bottom right.





The status bar at the bottom indicates "Internet | Protected Mode: On".

Figure 21 Consume Inventory Screen

Use the Scan Barcode field to scan the Item, Batch #, Locale and/or Serial Number barcodes for selection. If the barcode scanned is unique, it will populate the applicable field. If the Batch # or Serial Number barcodes are unique, the corresponding Item will populate as well. If the barcode is not unique within TME, you may need to manually select the item (or in the case of batch or serial numbers, select the Item first then scan the barcode).




If utilizing barcode technology is not an option, select the Item by clicking on the "Click here to look up"  icon to the right of the Item field. The Item LookUp screen will appear. Click on the Select Item icon  to the left of the Item Name. To add a new Item, click on the New icon  at the left side of the Viewer Toolbar (newly added Items will be added to the Items submodule accordingly). To scan the name of the Item instead of selecting manually, click within the Scan Barcode field at the top of the Item LookUp screen and scan (can also type in the name of the Item and hit Enter on the keyboard); the screen will close and the item will be selected. Once selected, the Item Name will populate the field as a link. Clicking on the link will bring up the Item Detail screen.

The screenshot shows a web browser window titled "TME -- Webpage Dialog" with the URL "http://demo.tmegateway.com/Gama150010/Module/Inventory/Item/inItemLookUp.aspx?ObjID=inItemLookUp1". The main heading is "Item LookUp". Below this is a "Scan Barcode:" label and an empty text input field. Below the input field is a toolbar with "New", "Excel", and "Views" buttons. Below the toolbar is a table with the following data:

Name	Description	Category	SubCategory
 20um 10"	20um 10" Water Filter	Water Filter	
 50um 10"	50um 10" Water Filter	Water Filter	
 50um 20"	50um 20" Water Filter	Water Filter	
 51625A HP DJ500C	Color DJ500C HP 51625A	Printer Ink	

At the bottom right of the table area is a "Cancel" button. The status bar at the bottom indicates "Internet | Protected Mode: On".

Figure 22 Item LookUp Screen

If the Item has a batch number, click on the "Click here to look up"  icon to the right of the Batch field. The Batch Number LookUp screen will appear. Click on the Select Item icon  to the left of the Batch Number. To add a new Batch Number, click on the New icon  at the left side of the Viewer Toolbar (newly added Batch Numbers will be added to the Batch Numbers detail screen for the Inventory Item accordingly). To scan the Batch Number instead of selecting manually, click within the Scan Barcode field at the top of the Batch Number LookUp screen and scan (can also type in the Batch Number and hit Enter on the keyboard); the screen will close and the item will be selected. However, if the Batch Number does not exist in the LookUp screen, a popup will appear with the message that the Batch Number does not exist (the Batch Number must already exist, follow up with Inventory Control personnel). If a Batch Number is not to be chosen, click the Cancel button or the X at the top right corner of the Item LookUp screen. Once selected, the Batch Number will populate the field as a link. Clicking on the link will bring up the Batch Number Detail screen.

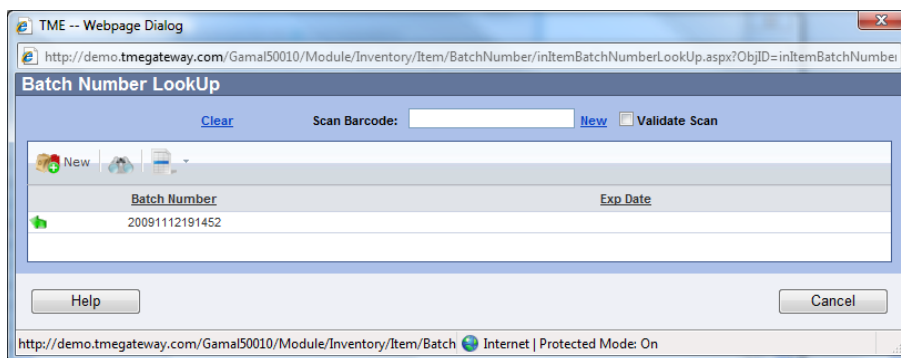


Figure 23 Batch Number LookUp Screen

If a Batch Number needs to be changed or removed, open up the Batch Number lookup screen. Click [Clear](#) to the left of the Scan Barcode field. Select or scan a new batch number or close the screen.

If the Item is serialized, the Serial Number field will appear. Select the Serial Number. If the Serial Number is not already in the system for the chosen Locale, a "This item and/or serial number could not be found in this Locale" popup screen will appear. Reselect the correct serial number. If it is correct and the popup message still appears, the Serial Number will need to be corrected in the Inventory module. Contact the TME Administrator for assistance if you do not have permission to access the Inventory module.



For all Serialized Inventory, the Batch Number selection will be disabled. When the Serial Number is selected, the Batch Number will automatically populate.

If the item is already in your My Inventory, select the "Consume From My Inventory" checkbox. Otherwise, choose the Locale from where the Inventory Item was retrieved by clicking on the Locale Link. The Select Locale popup will appear. To scan a label, click within the Scan Label field and scan. The series

of Locale drop-downs will populate accordingly. If not using a scanner, select the Campus from its drop-down list, the Building from its drop-down list and continue until the full string is complete. The User may also click on a Locale string in the Recently Used or Favorites field. Click on the Use This Locale Link to save the Locale or click on the X at the top right corner of the Select Locale Screen window to close without saving.

TME -- Webpage Dialog
http://demo.tmegateway.com/TME5807/Module/TMESystem/Locale/LocaleLookUp.aspx?ID=Locale1

Select Locale

Scan Label:

Campus: C01
Building: B01
Floor: FL01
Room: RM010
Location: R1

[Use This Locale](#)



Recently Used

- Andrews\81
- C01
- C1
- Kleid\Building 2\2nd Floor\2B6
- Warehouse

Favorites





- Andrews\85\2\Parts Room\Parts Cage
- Kleid\Building 2\2nd Floor\2B6

Figure 24 Select Locale Screen

Another option for selecting the Locale is to click on the "Click here to look up"  icon to the right of the Locale link. This will open the Locale LookUp screen consisting of only those locales where quantity of the item exists. Click on the Select Item icon  to the left of the Locale to select.

TME -- Webpage Dialog
http://demo.tmegateway.com/TME5807/Module/WorkTracking/WorkOrder/wtWorkOrderProcessInvTransQty.aspx

Locale LookUp

Campus	Building	Floor	Room	Location	Serial Number	Batch
 Kleid	Building 2	2nd Floor	2B6		561984894	111
 PVI						333
 Kleid	Building 2	2nd Floor	Metrology Storage			20120118103253
 Andrews	85	2	Parts Room			20110411140622

[Cancel](#)

Figure 25 Locale LookUp of Available Inventory Screen

The Available Qty will update with what is in the selected Locale. Type in the quantity to be consumed/returned into the Trans.Qty field.

Click on the Add button to place the Inventory Item into the list at the bottom of the screen. Repeat the process to add additional items to the list (including Non-Tracked).

#	Item	Desc	Locale	Batch	Serial	Qty	Unit
1	20um 10"	20um 10" Water Filter	Kleid\Building 2\2nd Floor\2B6	111	561984894	1	EA
2	50um 10"	50um 10" Water Filter	Kleid\Building 2\NANA\Gas Pad			2	EA
3	AMHS 8-BIT SENSOR E-84 Z071061010	8-BIT SENSOR E-84 Z071061010	Andrews\85\2\Parts Room\Parts Cage			1	EA

Figure 26 Items Added To Consume Item for Work Order List

Type in comments as applicable and click on the Submit button to save the entry. Once submitted, the Inventory Item(s) will be deducted/added from/to the Quantity for that locale. Also, the Inventory Trans. tab on the Work Order will update to show the transactions.

Trans.	Date Time	Item	Description	Quantity	Units	Unit Price
Consume	1/14/2013 11:56:54 PM	20um 10"	20um 10" Water Filter	1.0000000	EA	25
Consume	1/14/2013 11:56:54 PM	50um 10"	50um 10" Water Filter	2.0000000	EA	50.15
Consume	1/14/2013 11:56:54 PM	AMHS 8-BIT SENSOR E-84 Z071061010	8-BIT SENSOR E-84 Z071061010	1.0000000	EA	227.95

Figure 27 Work Order Inventory Trans. Tab with Tracked Inventory

Non-Tracked Inventory: Click on Consume or Return Inventory. The Consume (or Return) Item for Work Order screen will appear set to the Inventory Item tab (Tracked Inventory). Click on the Non-Tracked Item tab. Type in the Name, Description, Price, Quantity, Units and Comments into the appropriate fields.

Figure 28 Non-Tracked Item Consume Screen

Click on the Add button to place the Item into the list at the bottom of the screen. Repeat the process to add additional items to the list (including Tracked). Click on the Submit button to save the entry and add it as a line item on the Work Order History tab. The Non-tracked item(s) and cost will be reported within Work Tracking reports, but not as part of Inventory.

Trans.	Date Time	Item	Description	Quantity	Units	Unit Price
Consume	1/14/2013 11:59:46 PM	Duct Tape	3/4" Duct Tape	1.0000000	Roll	3.25
Consume	1/14/2013 11:56:54 PM	20um 10"	20um 10" Water Filter	1.0000000	EA	25
Consume	1/14/2013 11:56:54 PM	50um 10"	50um 10" Water Filter	2.0000000	EA	50.15
Consume	1/14/2013 11:56:54 PM	AMHS 8-BIT SENSOR E-84 Z071061010	8-BIT SENSOR E-84 Z071061010	1.0000000	EA	227.95

Figure 29 Work Order Inventory Trans Tab with Non-Tracked Inventory

- **Log Hours:** Hours can be set to automatically be tracked from the moment the Asset status is placed into an active Downtime state within the Work Order. Once the status is changed to Uptime, Nonscheduled or a non-active Downtime state, the hours are logged in the Work Order History as well as the Hours Logged tab. The minor statuses that are considered "active" are Production Test, Preventive Maintenance, Setup, Consumables, and Repair. The rest of the downtime states are considered "non-active" as they indicate that the Asset is down for reasons other than active work being completed on it for that time frame. Check with the TME Administrator to see if this feature has been activate.

If the automated logging is not activate or there are instances where additional hours may need to be logged--such as overtime (logging the extra half-time) and more than one technician working on the Asset at a time (logging the additional technician's hours), hour can be manually entered. To do so, click on Log Hours. If the hours are to be logged on behalf of another person, type in the alternate name. Select the appropriate rate code (if not known, contact the TME Administrator) and type in the hours worked.

If the hours worked occurred on a previous date, change the Date Applied from the current date to the date actually worked.

Enter Comments as applicable.

Click OK to submit. Once submitted, the hours will be logged and added as a line item on the Work Order History tab and the Hours Logged tab. There is no ability to edit Hours; but they can be deleted from the Hours Logged tab and re-logged if necessary.

The screenshot shows a 'Log Hours' dialog box. It has a title bar with the text 'Log Hours'. Inside the dialog, there are several input fields: 'Name:' with the value 'Gene Ironhill', 'Rate Code:' with a dropdown menu showing 'Default', 'Hours:' with the value '2.3', 'Date Applied:' with the value '5/12/2014' and a calendar icon, and a 'Comment:' text area. At the bottom right of the dialog is an 'OK' button.

Figure 30 Log Hours Screen

Work Order: 59371 (Service Request with Steps (1))

Status: Pending
Due Date: 1/15/2013
Priority: High
Type: PM
Cat/SubCat: Repair/Power
Locale: C01B011FL01RM010R1
Asset ID: 100 (UpTime Production)
Description: Power fluctuating too rapidly

Requestor: Admin
Request Date: 1/14/2013
Assigned To: Gene Ironhill-User
Start Date: 1/14/2013 9:54:05 PM
Est. Hours: 13.0
Actual Hours: 4.6
Inventory Cost: \$357

Actions:

- Edit Work Order
- Print Work Order
- Log Comment
- Update Asset Status
- Consume Inventory
- Return Inventory
- Log Hours
- Generate PO
- Collect Data
- Close Work Order

Work To Be Done: Attributes Steps History Inventory Trans. **Hrs. Logged**

BOM Items Documents Data Collections

Date Time	Name	Rate Code	Hours
1/15/2013 12:02:26 AM	Jack Smith	Assembly	0.5
1/15/2013 12:02:12 AM	Gene Ironhill	Repair	0.45
1/15/2013 12:01:57 AM	Gene Ironhill	Diagnosis	3.6

Help OK

Figure 31 Work Order Hours Logged Screen

- **Generate PO:** A Purchase Order can be generated directly from the Work Order. See the Purchase Order section of Chapter 7: Purchasing for details on how to create and submit a purchase order.
- **Collect Data:** Numerous pieces of data can be collected on an Asset. The data can be meter readings, documents, inspection results, etc. Click on the Collect Data link.

Work Order Data Collection

Documentation
Power Measurements

Open

Figure 32 Asset Data Collection Screen

Choose the appropriate Collection from the drop down screen and click on **Open**. The Collection screen will open with the fields for which data is to be collected. If a variable onscreen is required, it may have a default entry already applied. If the default entry applies, changes are not needed. If the default entry is incorrect for the record, then change the value accordingly. Click Submit when finished entering data.

For more information on the entry of data for the different data types, see the

Collecting Data portion of Chapter 2: Driver's Seat.

- **Close Work Order:** Once started, Work Orders must at some point be closed whether or not the work has been completed. Click on the Close Work Order link (if permission has not been provided, the link won't be available—see the TME Administrator for assistance; it may be restricted to designated personnel such as supervisors). Select the radial button to indicate whether or not the work was completed. Select the radial button to indicate whether or not the Work Order was the result of a Supplier Dependent Failure (check with the TME Administrator on what the corporate policy is for making that determination). Certain Work Orders require the selection of which Module of the Asset failed, what the Failure was and the Corrective Action that was taken. Make those selections from the drop-down lists accordingly.

If the Asset is still in a Downtime state, a notice in red will appear in the middle of the screen. Action is not required unless the Asset needs to be placed back into the Uptime state prior to closing the Work Order. If so, close the screen without saving. Change the Asset Status accordingly and return to the Close Work Order screen.

Type in any applicable Comments and click on the Close Work Order button to complete the process. Once closed, the links will change to Edit Work Order and Reopen Work Order whenever the Work Order is viewed.

Figure 33 Close Work Order Screen

Exercise 2:



Process a work order—change the due date by adding another day; change the priority; automatically log time worked twice by updating the Asset Status; log an additional two hours; consume a batched and a serialized inventory item as well as a non-tracked item; log two comments; close the work order.

Exercise 3:



Reopen the work order—log an additional comment and close.

Processing a Work Order with Attributes

Work Orders have an unlimited number of Attribute fields available via the Attributes tab. These fields can be Text, Date, Number, Drop-Down, Check Box, Document, and Formula data types. Many of them can have ranges and default values as appropriate. These attributes can be global or restricted based on the Process chosen or the Scheduled Work from which the Work Order was generated. They can also be set up as required or non-required fields. To supply, edit or view the attributes of a Work Order, click on the Attributes tab.

The screenshot shows a web browser window titled "TME -- Webpage Dialog" with the URL <http://demo.tmegateway.com/TME5807/Module/WorkTracking/WorkOrder/wtWorkOrderProcessMain.aspx?Action=Edit&UID=579a80db-a4c3-4f>. The main content area is titled "Work Order: 59371 (Service Request with Steps (1))".

Status:	Pending	Requestor:	Admin
Due Date:	1/15/2013	Request Date:	1/14/2013
Priority:	High	Assigned To:	Gene Ironhill-User
Type:	PM	Start Date:	1/14/2013 9:54:05 PM
Cat/SubCat:	Repair/Power	Est. Hours:	13.0
Locale:	C01\B01\FL01\RM010\IR1	Actual Hours:	4.6
Asset ID:	100 (UpTime Production)	Inventory Cost:	\$357
Description:	Power fluctuating too rapidly		

Below the metadata, there are tabs for "Work To Be Done:", "Attributes" (highlighted with a red circle), "Steps", "History", "Inventory Trans.", and "Hrs. Logged". Under the "Attributes" tab, there are sub-tabs for "BOM Items", "Documents", and "Data Collections".

The "Attributes" section includes:

- Picture:** [cpk calculations.xls](#)
- Link to Safety Documentation:** www.tmegateway.com/Safety
- IMPORTANT:** The documentation must be the most up-to-date version. Verify prior to uploading.

On the left side, there is an "Actions:" menu with the following links:

- Edit Work Order
- Print Work Order
- Log Comment
- Update Asset Status
- Consume Inventory
- Return Inventory
- Log Hours
- Generate PO
- Collect Data
- Close Work Order

At the bottom of the dialog, there are "Help" and "OK" buttons.

Figure 34 Attributes Tab on Work Order

To enter an Attribute into a text field, click in the field and type the entry. For an Attribute that requires a date, click on the Open the Calendar Popup icon and select the date. Some Attributes require the entry of a number, click in the field and type in the number. For those Attributes with a drop-down list, click on the arrow on the right side of the drop-down field and select the appropriate entry. If an Attribute has a checkbox, click the checkbox if the Attribute is to be applied to the Asset. For further detail, see the Collecting Data section of Chapter 2.

Processing a Work Order with Steps

If a Work Order contains Steps, they are listed and worked upon in the Steps tab. Each record shows the Operation, Step Name, Asset Associated, Assigned To, Status and various icon markers.

Work Order: 59371 (Service Request with Steps (1))

Status:	Pending	Requestor:	Admin
Due Date:	1/15/2013	Request Date:	1/14/2013
Priority:	High	Assigned To:	Gene Ironhill-User
Type:	PM	Start Date:	1/14/2013 9:54:05 PM
Cat/SubCat:	Repair/Power	Est. Hours:	13.0
Locale:	C01\B01\FL01\RM010\IR1	Actual Hours:	4.6
Asset ID:	100 (UpTime Production)	Inventory Cost:	\$357
Description:	Power fluctuating too rapidly		

Actions:

- Edit Work Order
- Print Work Order
- Log Comment
- Update Asset Status
- Consume Inventory
- Return Inventory
- Log Hours
- Generate PO
- Collect Data
- Close Work Order

Steps Tab:

Operation	Step	Asset	AssignedTo	Status
Repair or PM Work (1)	Inventory			Available
Repair or PM Work (1)	Comments			Available
Repair or PM Work (1)	Log Hours			Locked
Repair or PM Work (1)	Reject			Available

Step 'Inventory' is a prerequisite to this step.




Figure 35 Work Order Steps Tab

Status Definitions:

- Available: has not been started, but is available to be worked; if multiple Steps have this status, they can be worked on in any order
- InProcess: has been started, is available to be worked; if multiple Steps have this status, they can be worked on in any order
- Locked: another Step(s) must be completed first, hover over the lock icon and a tool tip will appear indicating which Step is the prerequisite
- Completed: has been Completed, can be reopened by double-clicking on record

Icon Markers:

- : Click on icon to Start the Step without having to open the record; visible when Status is "Available"

- : Click on icon to Complete the Step without having to open the record; visible when Status is "InProgress"; Complete Step screen will appear to allow for the inclusion of Comments
- : Lock icon to indicate that a prerequisite step must be completed first; hover over it and a tool tip will appear indicating which Step is the prerequisite
- : Indicates that the Step is required to be completed before the Work Order can be closed.

To take actions against a Step beyond just starting and completing, double-click on it to open the Work Order Step screen. The screen contains the Work To Be Done, History, and Documents tabs. These tabs, the header information, and the Action links on the left are for the selected Step only.

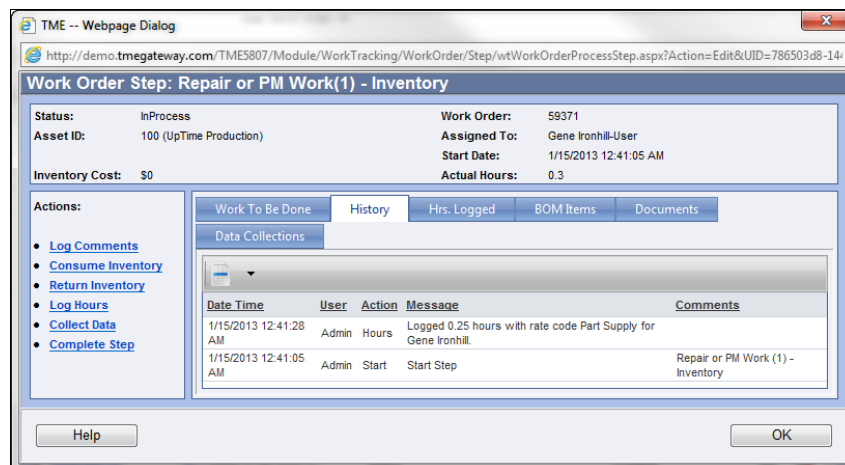



Figure 36 Processing a Work Order Step

If not already started, click on the Start Step link. The rest of the Action links will become available possibly even the Reject Step link. **Only those Action links predefined for the Step will be available.** These Action links are identical to those of the Work Order and function in the exact same manner. The difference is that if there is an alternate Asset attached to the Step, inventory and labor hours logged will be recorded to that Asset. All Actions taken within the Step are logged on the History tab for the Step as well as for the Work Order. Additional tabs for Documents, Bill of Materials, Inventory and Hours Logged will appear on the Work Order Step screen as appropriate in the same manner as they do for the Work Order as a whole. For more details on how the Action Links function, view the Work Orders section of this chapter.

To complete a Step, click on the  icon from the Steps viewer screen or open the Step and click on Complete Step. Any Steps that had been locked based on the Step having been a prerequisite will automatically become Available.

To reopen a Step, double-click on it to open the Work Order Step screen and click on Reopen Step. The appropriate Action links will once again become available. Any

Steps that require this Step as a prerequisite will become locked until it has been once again completed.

All Steps that have been preset as Required will need to be Completed before a Work Order can be closed.

History of a Work Order

Every edit and transaction that takes place against a Work Order and its Steps is recorded on the History Tab of the Work Order. Though Hours Logged and Inventory Transactions also have data on their respective Tabs, all records are co-located on the History Tab.

Work Order: 59371 (Repair or PM Work (1))

Status:	Pending	Requestor:	Admin
Due Date:	3/28/2015 12:40:54 PM	Request Date:	1/14/2013
Priority:	High	Assigned To:	Gene Ironhill-User
Type:	PM	Start Date:	3/27/2015 12:47:09 PM
Cat/SubCat:	Repair/Power	Est. Hours:	13.0
Locale:	C01B011FL01RM010VR1	Actual Hours:	4.8
Asset ID:	100 (UpTime Production)	Inventory Cost:	\$357
Description:	Power fluctuating too rapidly		

Actions:

- [Edit Work Order](#)
- [Print Work Order](#)
- [Log Comment](#)
- [Update Asset Status](#)
- [Consume Inventory](#)
- [Return Inventory](#)
- [Log Hours](#)
- [Generate PO](#)
- [Collect Data](#)
- [Close Work Order](#)

Work To Be Done: Attributes Steps **History** Inventory Trans. Hrs. Logged BOM Items Documents

Data Collections

Date Time	User	Action	Message	Comments	Notes	Flagged
3/27/2015 12:52:15 PM	Admin	Close	Close Step	Repair or PM Work (1) - Inventory		False
3/27/2015 12:52:06 PM	Admin	Hours	Logged 0.25 hours to be applied at 3/27/2015 with rate code Part Supply for Gene Ironhill.			False
3/27/2015 12:51:55 PM	Admin	Hours	Logged 0.5 hours to be applied at 3/27/2015 with rate code Assembly for Jack Smith.			False
3/27/2015 12:51:39 PM	Admin	Hours	Logged 0.45 hours to be applied at 3/27/2015 with rate code Repair for Gene Ironhill.			False
3/27/2015 12:51:07 PM	Admin	Hours	Logged 3.6 hours to be applied at 3/27/2015 with rate code Diagnosis for Gene Ironhill.			False
3/27/2015 12:48:07 PM	Admin	Inventory	Consumed (Tracked Part) 1 Roll(s) of "3/4" Duct Tape"			False
3/27/2015 12:47:51 PM	Admin	Inventory	Consumed (Tracked Part) 1 Each(s) of "AMHS 8-BIT SENSOR E-84 Z071061010"			False
3/27/2015 12:47:09 PM	Admin	Start	Start Work			False

Help OK

Figure 37 Work Order History Tab

To add Notes or Flag a record in History, double-click on the record to open the event detail screen. All populated fields are read only. Type in any Notes and/or check the Flagged checkbox.

If a Data Collection had been made during the event, a link to the Data Collection will be available to allow a User with permission to edit Data Collections to do so.

Save/Close when ready.

Figure 38 Work Order Event Detail Screen



A Flagged record is generally meant to indicate that the record should be disregarded/excluded. There is no concept of deleting a record from History. The viewer (and Reports) can be filtered to show only non-Flagged items.

Date Time	User	Action	Message	Comments	Notes	Flagged
3/27/2015 01:25:12 PM	Admin	Comment	Log Comment	Issue with power fluctuation is still a problem. Will take another look.	Ignore comment, was meant for another work order	True
3/27/2015 12:52:15 PM	Admin	Close	Close Step	Repair or PM Work (1) - Inventory	Forgot to enter Comments when closing step--everything went smoothly	False
3/27/2015 12:52:06 PM	Admin	Hours	Logged 0.25 hours to be applied at 3/27/2015 with rate code Part Supply for Gene Ironhill.			False
3/27/2015 12:51:55 PM	Admin	Hours	Logged 0.5 hours to be applied at 3/27/2015 with rate code Assembly for Jack Smith.			False
3/27/2015 12:51:39 PM	Admin	Hours	Logged 0.45 hours to be applied at 3/27/2015 with rate code Repair for Gene Ironhill.			False

Figure 39 Work Order History with Notes/Flags

Scheduled Work

Detailed preventive maintenance can be set up for all assets as well as locales. The schedules can be configured by various time settings such as daily, weekly, monthly, etc. They can also be configured by equipment metrics such as production hours, mean time between failure, etc., as well as by other Scheduled Work (the triggering of one Scheduled Work activity can trigger others). When Scheduled Work is triggered, a Work Order is created. Every Scheduled Work can be assigned to an Asset along with corresponding instructions. The schedule is displayed on the Maintenance Calendar with each Asset clearly identified. Asset Reservations can also be created based on the schedule.

The Scheduled Work viewer can be accessed via Go To from the Task Bar or from the Inventory Module within a Menu Group.

Scheduled Work ID	Description	Plan	Asset ID	Assigned To	Next Trigger Date	Trigger	Trigger Now
432	Testing trigger off of a meter	Perform Interoperability Test			4/11/2011 12:00:00 AM	When meter (100) goes beyond 1709 Gallons	Trigger Now
436	VWJETT A/C Check	Run A/C	CAR2	Kyle Sawyer	12/14/2011 12:00:00 AM	After 3000 Downtime hours from 3/9/2012	Trigger Now
443	Default Work	Abatement Quarterly PM	100		3/13/2012 12:00:00 AM	On Hold	Trigger Now
444	Triggers off of 443		153	Gene Ironhill-User	3/8/2012 12:00:00 AM	On Hold	Trigger Now
445	Triggers off of 443 too		197		3/8/2012 12:00:00 AM	When Scheduled Work Order ID 443 is triggered	Trigger Now
446	Repair with Steps	00 Test	139B		3/12/2012 12:00:00 AM	On Hold	Trigger Now

Figure 40 Scheduled Work Viewer

Trigger Now

The Trigger Now link that is available for every record in the right hand column of the viewer and provides a means for instantly triggering a Work Order. A popup message indicating that a Work Order has been created will appear. The Next Trigger Date will adjust to what would have been the next trigger date had the Scheduled Work triggered based on the schedule. For instance, if the schedule is for the 1st of every month and the Trigger Now link is clicked on February 15th (instead of waiting until March 1st); the Next Trigger Date will change to April 1st.

To adjust the Next Trigger Date to go back to March 1st, open the Scheduled Work. Click on the Trigger Additional Link, click on the Calendar icon for Next Trigger Date and select March 1st. Save/Close.

Setting Up Scheduled Work



New Scheduled Work can be added by clicking on .

Figure 41 New Scheduled Work Detail Screen

- A)** Select the Process for the Scheduled Work which will serve as the Work Order template by clicking on the  icon in the same manner as described for a Work Order
- B)** Type in the Description and select the Priority.
- C)** Scheduled Work can be assigned to either a User or a Group in the same manner as described for a Work Order.
- D)** The Type, Category and SubCategory fields are determined by the Process selected for the Scheduled Work. They can be changed as needed.
- E)** If Asset Reservations are to be automatically generated off of the Scheduled Work based on the scheduled trigger dates, set the Start Time that is to be set for the reservations. The number of Hours entered will determine the end time of the reservations.
- F)** The entry for the Hours field serves as the end time of Asset reservations generated, but also as the estimated number of labor hours for the triggered Work Orders.
- G)** If the Scheduled Work is for work to be done on an Asset, select it accordingly.

H) The Location will populate with the current location of the Asset selected. If the Scheduled Work is not Asset related or the work is to take place in an alternate location, click on the Locale link and select a new Locale.

I) Type in the synopsis of what is to be done in the Work To Be Done field. If the Process chosen does not include Steps as part of the template, put in as much detail as necessary in the Work To Be Done field.

Additional Links

The links for Documents, Inventory BOM and Steps work in the same exact fashion as on the Work Order. Once set up on Scheduled Work, they will flow into every Work Order triggered off of it.

Trigger Link

The Trigger link is where the schedule and additional options are set for the Scheduled Work.

Figure 42 Scheduled Work Trigger Screen

Enable the Scheduled Work by selecting Active as the Status. The Status will need to be set at Inactive for those situations where the Scheduled Work is being placed on indefinite hold or it's been put into the system in advance without having an initial start date.

Determine what the Options are--select the appropriate checkboxes for expiration (click on the Calendar icon to select the date) and whether it's a one-time event as applicable.

Type in the number of days that the Work Order will be due once it has been created. For instance, type in "1" if the Work Order is to be due one day after it's created; type in "0" if it's due the same day.

Select the checkbox for "Hold Next Trigger Until Work Is Complete" in order to prevent triggering of the next scheduled work until the prior work order is closed. If the Scheduled Work is to trigger regardless of the status of work orders previously triggered, leave the checkbox unchecked. The hold status will automatically alternate between Ready and Hold accordingly (see example within Trigger By Schedule section below).

The Scheduled Work can be set to trigger off of one (or more) of three ways: Schedule, Equipment Metrics, and/or another Scheduled Work. Click on the checkboxes that apply.

Schedule

Select the checkbox for "Create This Work Order based on a Schedule" to open the schedule settings.

If applicable, select the checkbox for "The maximum days this work order can be triggered before the trigger date" and enter in a number of days for this option. This will limit how early a User can trigger a Scheduled Work into a Work Order. If not checked, there will be no limit.

Select the Next Trigger date by clicking on the Calendar icon--this is the date that the Runtime Engine will trigger the first/next Work Order.

Select the checkbox for Floating Date if the Next Trigger Date is to be scheduled based on not only the calendar schedule, but also the Close Date instead of the trigger date of the previously triggered work order.

The screenshot shows a 'Triggers' section with the following elements:

- ☒ Create this Work Order based on a Schedule
- ☒ 1 The maximum days this work order can be triggered before the trigger date.
- Next trigger date: 6/8/2015 [Calendar icon] ☐ Floating Date
- ☐ Daily Every 1 Day(s)
- ☒ Weekly Every 1 Week(s)
 - On ☐ Sun ☒ Mon ☐ Tue ☐ Wed
 - ☐ Thu ☐ Fri ☐ Sat
- ☐ Monthly
 - ☒ Day 1 of the Month(s)
 - ☐ The First Sunday of the Month(s)
 - ☒ Every 1 Month(s)
 - ☐ ☒ Jan ☒ Feb ☒ Mar ☒ Apr ☒ May ☒ Jun
 - ☒ Jul ☒ Aug ☒ Sep ☒ Oct ☒ Nov ☒ Dec
- ☐ Generate Asset Reservations for this schedule. [Reservation Calendar](#)
- Reservation Category: [Dropdown]
- Reference Type: [Dropdown]

Figure 43 Trigger By Schedule

Example: a schedule is set for every twenty days with Hold and Floating Date set. The Scheduled Work initially triggers on February 1. The Scheduled Work's Hold Status changes to Hold. The resulting work order is closed on February 5. The Scheduled Work's Hold Status changes to Ready and the Next Trigger Date is reset for February 25 (twenty days after the Close date, not the initial trigger date).

The rest of the trigger dates are determined by the time schedule. Choose Daily, Weekly, or Monthly. If Daily, choose Every X Day(s). If Weekly, choose Every X Week(s) and the days of the week on which the Work Order is to be created. If Monthly, choose either Day X of the Month(s) or choose the first, second, third, or fourth particular Day of the Week for any given month. For Monthly, also choose Every X Months or choose specific Months.

Select the checkbox to Generate Asset Reservations for this schedule if they are to appear on the Reservation Calendar upon saving of the Scheduled Work. To view the Reservation Calendar from the Trigger screen, click on the Reservation Calendar link.

Equipment Metrics

Select the checkbox for "Create this Work Order based on Metrics" to open the metrics settings.

Triggers:

☐ Create this Work Order based on a Schedule

☐ 0 The maximum days this work order can be triggered before the trigger date.

☒ Create this Work Order based on Metrics

Select a measurement:

Measured Range: Last Days

Trigger when value goes

Note: this scheduled work order will be set to "Inactive" when this trigger fires.

☐ Create this Work Order based on the Trigger of another Scheduled Work Order

Figure 44 Trigger by Metrics

Triggers:

☐ Create this Work Order based on a Schedule

☐ 0 The maximum days this work order can be triggered before the trigger date.

☒ Create this Work Order based on Metrics

Select a measurement:

Meter:

Trigger After:

Reset Interval: ☐ Floating

☐ Create this Work Order based on the Trigger of another Scheduled Work Order

Figure 45 Trigger by Metrics - Meter Data

Select the measurement by which the Scheduled Work will be triggered. Type in the number of hours that are to be reached in order for a Work Order to be triggered. If applicable, click on the calendar icon to select the date from which the Runtime Engine will start counting.

If the trigger is to be based on a Meter Reading, select the Totalizer Variable off of which the reading is to be collected from the Meter drop down list. Type in the value of the meter reading that will trigger the Scheduled Work into the Trigger After field. In the Reset Interval field, enter the value to add to the Trigger After entry to calculate the next trigger point. Select the checkbox for Floating if the Trigger After is to be calculated based on the reading that triggered the Scheduled Work plus the interval or leave unchecked if the Trigger After is to be calculated based on the initial Trigger After value plus the interval.

Example: The initial Trigger After is set at 500, interval set for 400 and the checkbox for Floating is selected. A reading of 554 triggers the Scheduled Work. The Trigger After value automatically updates to 954 (554 plus 400). If the floating checkbox had not been selected, the Trigger After value would have automatically updated to 900 (500 plus 400).

Other Scheduled Work

Select the ID of the Other Scheduled Work that once triggered, will trigger this one. The Work Order Description, Trigger and Asset ID for the Other Scheduled Work will populate the fields accordingly.

Triggers:

- ☐ Create this Work Order based on a Schedule
- ☐ 0 The maximum days this work order can be triggered before the trigger date.
- ☐ Create this Work Order based on Metrics
- ☒ Create this Work Order based on the Trigger of another Scheduled Work Order

Select Other Work Order ID: 302

Work Order Description: PM QUARTERLY

Trigger: Every 91 Days

Asset ID: Oven 1

Figure 46 Trigger by Other Scheduled Work

Save using the Detail Toolbar or Taskbar, close by clicking on File on the Detail Taskbar and then Close or click on the X at the top right corner of the Details Screen window, or continue viewing the record by clicking on the Information link or another Additional Link.

Notification Link

Specific Users can receive email notifications when a Work Order has been triggered off of the Scheduled Work. To set it up, click on the Notification link on the Scheduled Work's Detail Screen and make selections accordingly (selecting works the same as all previous modules).

Copy Scheduled Work

To copy a Scheduled Work, double click on the Scheduled Work to be copied. Click on Actions on the Detail Taskbar and then Generate Copy. The Scheduled Work that was originally opened to be copied will close and the copy's Detail screen remains open. Edit the details on the Information screen and make further adjustments within the Additional links as required.

Exercise 4:



Create Scheduled Work that will create WOs every third Friday of every other month with a due date one day after creation of WO and based on 20 Production Hours—whichever comes first. Add a Document and Notification to yourself and another User. Copy the Scheduled Work and set the trigger for an annual schedule.

Exercise 5:



Edit the Scheduled Work Order so that the WOs are created two days before their next due date. Delete the other User from the Notification.

Exercise 6:



Create a Scheduled Work Order via the Asset Detail screen with a trigger set to fire once the Scheduled Work Order from Exercise 4 has fired.

Exercise 7:



Trigger the first Scheduled Work from Exercise 4. Reset the trigger date based for one week later. Process the Work Orders (you should also have the one triggered as a result of Exercise 6) that were triggered—automatically log hours, consume an inventory item, and close.

Real Time Status

In the Real Time Status submodule, Users (provided with the appropriate security setup) are able to view the real time status of all their Assets as well as a list of those Assets that are currently in a Downtime state. It can be accessed via Go To from the Task Bar or from the Work Tracking Module within a Menu Group.

Real Time Status Screen

To access a visualization of the current statuses of the Assets, click on the Real Time Status link in the Real Time Status submodule. Assets are listed either by Category and SubCategory or by Group and SubGroup. Choose which one from the Filter the View drop-down list. The colored squares represent individual Assets.

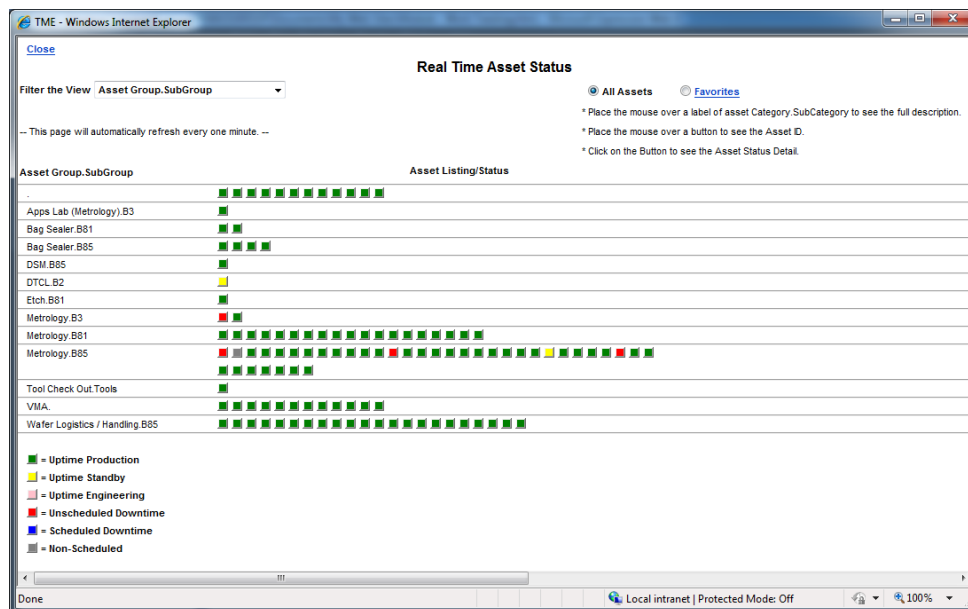


Figure 47 Real Time Status Screen

To filter the screen for certain Assets, click on the Favorites radial button. If there are multiple groupings of Assets available, click on the Favorites link, choose desired Group from the Current Group drop down list and click on OK.

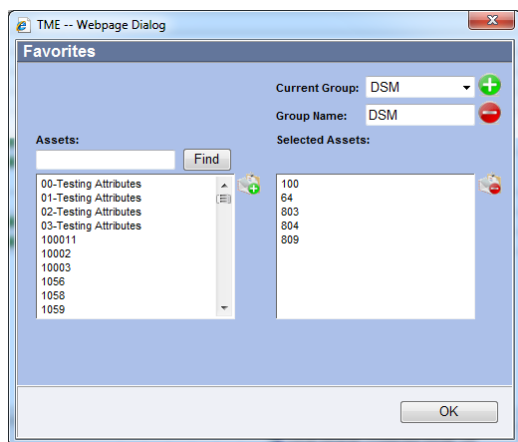


Figure 48 Selecting Favorite Assets for Real Time Status Screen

To set up different groups of Assets for display, click on the Favorites link. Type in a Group Name and click on to move the entry into the Current Group field. Select the Assets to be included in the Group (hold the Ctrl key if making multiple selections) and click on to move them into the Selected Assets field. To remove an Asset, select the Asset and click on the icon. Click OK when finished. To add an additional Group, repeat the process. NOTE: when finished adding Assets to a Group, click OK and reopen the screen prior to adding another Group.

A legend for the color scheme is provided at the bottom of the screen. The screen will refresh and update every one minute and can remain up and running as Users utilize other areas of TME.

To see what Asset a square represents, place the mouse over the square and the Asset ID will popup. Click on the square and the Operations screen for the Asset will appear. The screen has the same functionality as when opened in the Operations submodule.

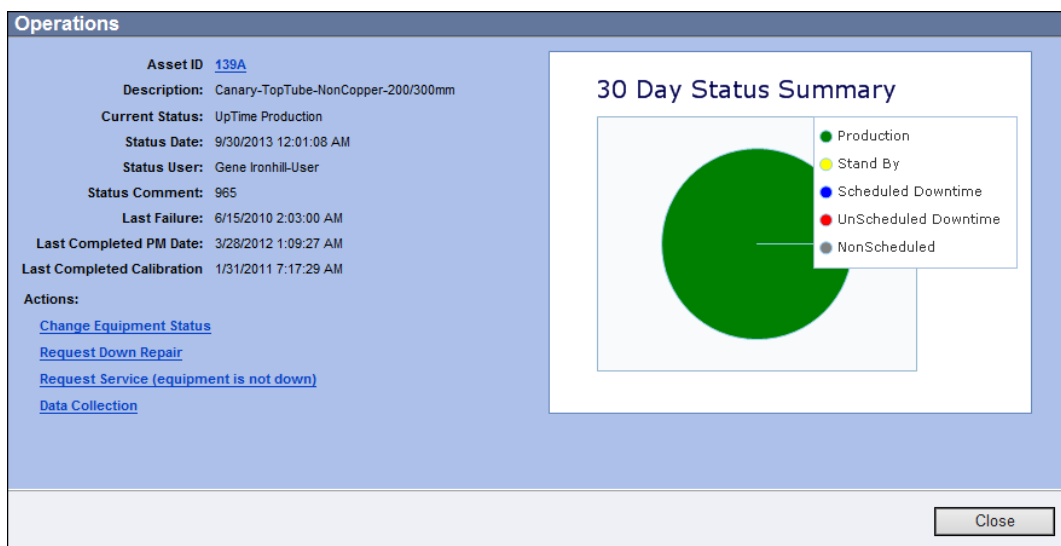
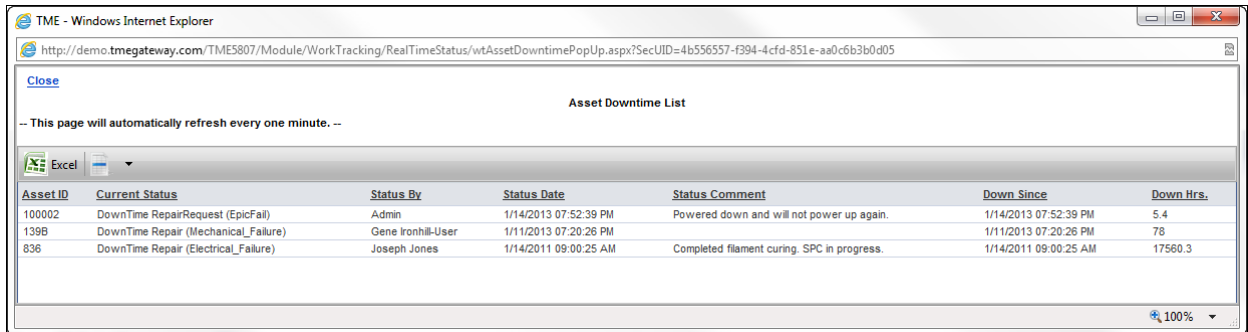


Figure 49 Operations Detail Screen

Asset Downtime Screen

To access an up-to-date list of the Assets that are in a Downtime state, click on the Asset Downtime link in the Real Time Status submodule. The Asset Downtime screen will appear with a toolbar that contains the Export to Excel and Records per Page functions. The sorting by column functionality works as well. The screen will refresh and update every one minute and can remain up and running as Users utilize other areas of TME.



Asset ID	Current Status	Status By	Status Date	Status Comment	Down Since	Down Hrs.
100002	DownTime RepairRequest (EpicFail)	Admin	1/14/2013 07:52:39 PM	Powered down and will not power up again.	1/14/2013 07:52:39 PM	5.4
139B	DownTime Repair (Mechanical_Failure)	Gene Ironhill-User	1/11/2013 07:20:26 PM		1/11/2013 07:20:26 PM	78
836	DownTime Repair (Electrical_Failure)	Joseph Jones	1/14/2011 09:00:25 AM	Completed filament curing. SPC in progress.	1/14/2011 09:00:25 AM	17560.3

Figure 50 Asset Downtime Screen

Exercise 8:



Change the Major and Minor Status of every Asset and make sure to have different combinations. Check the Real Time Status and Asset Downtime screens. Change the Status of the Assets again and see how the screens have changed.

Work Tracking Calendar

The Work Tracking Calendar is a graphical tool for showing current Work Orders, completed Work Orders and Scheduled Work that is set to be triggered. It can be accessed via Go To from the Task Bar or from the Work Tracking Module within a Menu Group.

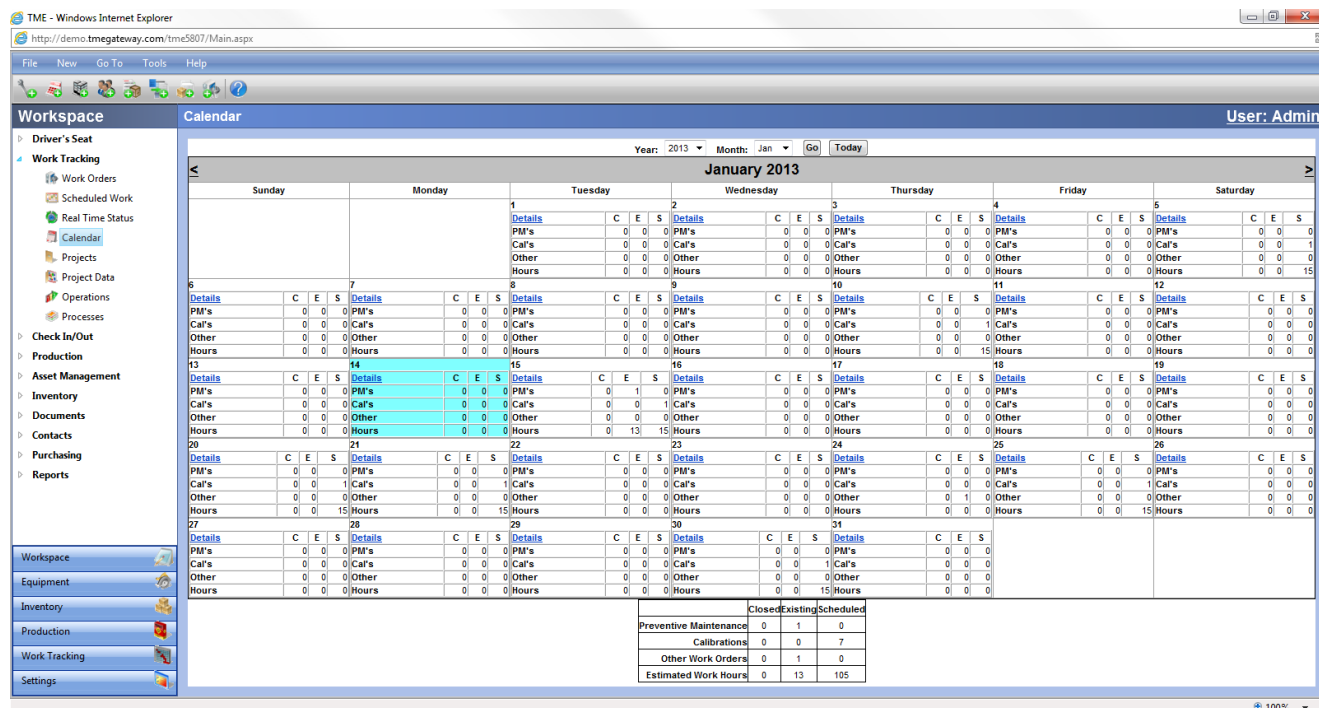


Figure 51 Work Tracking Calendar

Choose what month to view by selecting the Year and Month from the drop-down lists and click on the Go link. To return to the current month, click on the Today link. Clicking on the left and right arrows located in the title bar of the month will scroll through previous or future months accordingly.

The calendar displays the following information for each day:

1. C - # of Completed WOs
2. E - # of Existing WOs
3. S - # of Scheduled Work to be triggered
4. PM's - # of WOs with types designated as Preventive Maintenance
5. Cal's - # of WOs with types designated as Calibration
6. Other - # of WOs with types designated as Other

7. Hours - # of estimated labor hour for the WOs in that column
8. Details link that when clicked provides a popup screen with detailed information of the WOs for that day
9. Table of Totals - found at the bottom of the screen. This tabulates the total per type (PM, Cal, Other), per status (C, E, S) and Estimated Work Hours for the month.

Daily Details

Click on the Details link for the day to be viewed.

Maintenance Calendar Details

Select Date is 1/15/2013

Closed Work Orders

WO ID	Asset ID	WO Description	Assigned To	WO Type	Priority	Est. Hours	Gen
-------	----------	----------------	-------------	---------	----------	------------	-----

Existing Open Work Orders

WO ID	Asset ID	WO Description	Assigned To	WO Type	Priority	Est. Hours	Gen
59371	100	Power fluctuating too rapidly	Gene Ironhill-User	PM	High	13	Manual

Scheduled Work Orders

Plan Name	Asset ID	WO Description	Assigned To	WO Type	Priority	Est. Hours
00Test Plan	146	PM Work	Gamal Balady	Calibration	High	15

Figure 52 Work Tracking Calendar

The Work Tracking Calendar Details screen will appear with the selected date in bold under the TME logo and three sections. The first section shows what Work Orders have been completed so far on this day. The second section lists the Work Orders that are still open and due on this day. The third section lists the Scheduled Work that had been (if looking at a previous day) or are (future date) scheduled to be triggered.

Exercise 9:



Create a Repair Request, edit so that it's due today. Create and close a manual work order. Create a Scheduled Work with its next Trigger Date set for today. Verify all three on the Details screen for today. Close the Repair Request and verify that it is no longer listed in the Existing Open Work Orders list but has moved to Closed Work Orders.

Projects

The Projects submodule is a means for tracking non-Work Order related tasks, meetings, projects, training, etc.

To start a session, access Projects via Go To from the Task Bar or from the Work Tracking Module within a Menu Group.

Figure 53 Work Tracking Projects Data Entry

Select the Project Name from the drop-down list. Type in Original Comments (Required) and click the Submit button. The screen will display the start time and bring up the field for entering Additional Comments upon ending the session. The screen will not allow a User to start a session on another Project until the current session has ended by typing in Additional Comments (Required) and clicking on the Submit button. The screen will return to the original state of readiness to start a different session.

The history of Project sessions is available to the TME Administrator and Users with provided permission via the Project Data submodule (see the Settings Chapter for more detail on Project Data) within Work Tracking or via Reports.

Exercise 10:



Start and finish a session of a project.

Operations

Operations are the building blocks of Processes which in turn are the templates for TME Work Orders. Each Operation contains one or more Steps which are set up with rules and Actions and when translated onto a Work Order, can be assigned to different Users or Groups as well as associated to different Assets. The Operations can be utilized by a single Process in a one-to-one relationship or used over and over again in a one-to-many relationship.

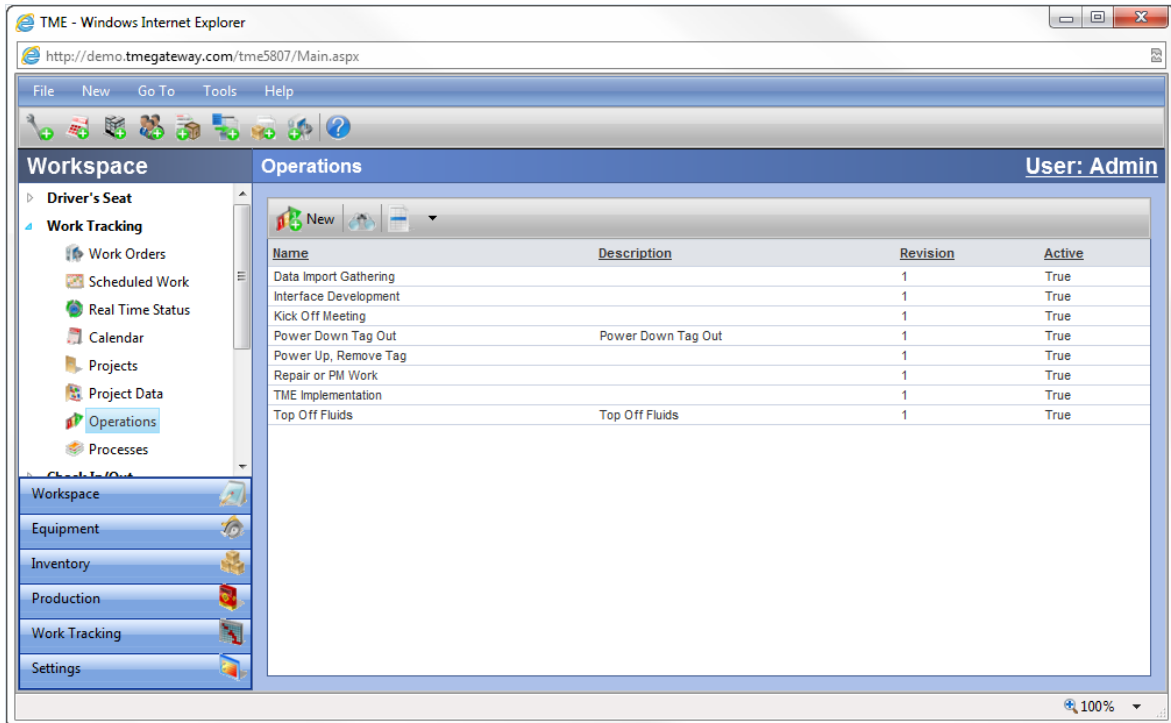



Figure 54 Operations Viewer

New Operations can be added by clicking on the  icon.

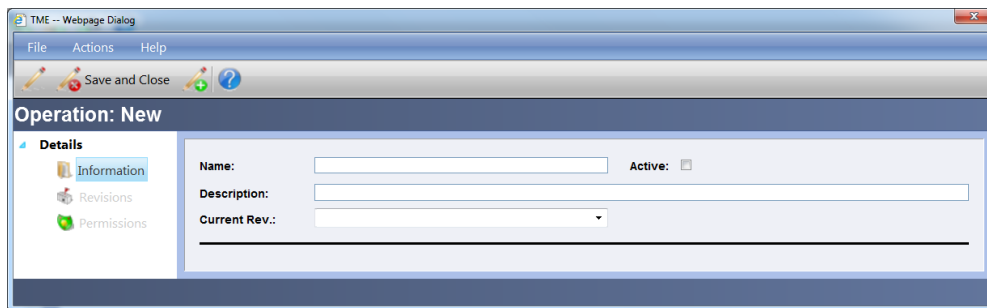


Figure 55 New Operation Detail Screen

Type in the name of the Operation. This is what will be visible when selecting onto a

Process. Click on the Active checkbox in order for the Operation to be available for selection. Type in the Description of the Operation.


NOTE: Once an Operation has generated a single Work Order, it cannot be deleted. If it needs to be "retired," make it inactive by deselecting the Active checkbox on the Information screen.

The Current Rev. drop-down list will be empty for now.

Operation Revisions

An Operation can have multiple Revisions. There are two basic reasons for this:

1. Once a Work Order has been triggered off of a Revision of an Operation, the Steps cannot be changed in any way. In order to be able to change the Steps, a new Revision will need to be made and the older Revision(s) made Inactive.
2. More than one Revision may be active within an Operation in order to keep the overall template of a Work Order, but have slightly different Steps in order to accommodate the needs of different Assets (i.e., different Bills of Materials, Lock Down Tag Out procedures, etc.).

To set up a Revision, click on the Revisions link on the Process Detail screen. Click the  icon. Once the Revision has been saved, it needs to then be selected as the Current Revision on the Information screen. As a new Revision is added, change the Current Revision selection accordingly.

Type in the name of the Revision. This is what will be on the Operation LookUp screen along with the Operation Name when making a selection for a Process.

Check the Active checkbox so that the Revision will be available on the LookUp screen.

If applicable, check the Required checkbox. Once added to a Process and generated into a Work Order, the Steps from this Revision of the Operation will be required to be completed prior to the Work Order being closed.

Check the Run Out of Order checkbox if on the generated Work Order the Steps can be worked on in any order (provided that prerequisites have not been set up at the Step level). **NOTE: Once a Revision has generated a single Work Order, it cannot be deleted. If it needs to be "retired," make it inactive by deselecting the Active checkbox on the Information screen.**

Enter any Notes if desired.

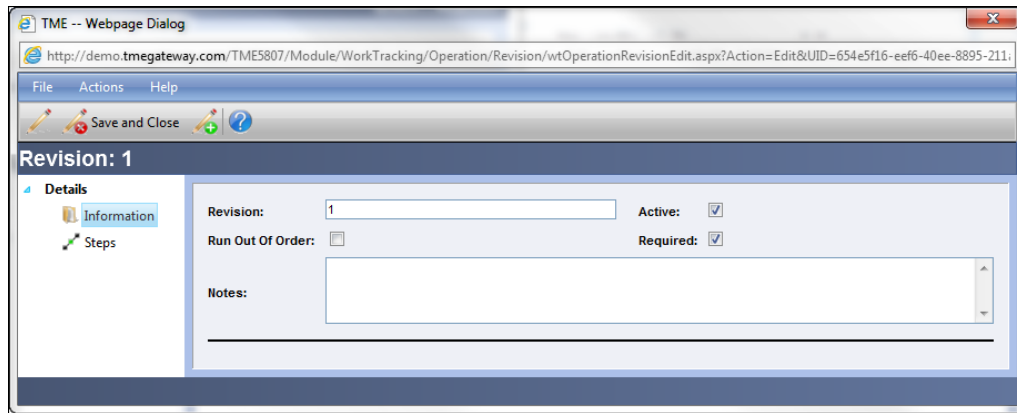



Figure 56 Operation Revision Detail Screen

Steps within an Operation

To set up the Steps in an Operation, click on the Steps link on the Operation Revision Detail screen. Click the  icon.

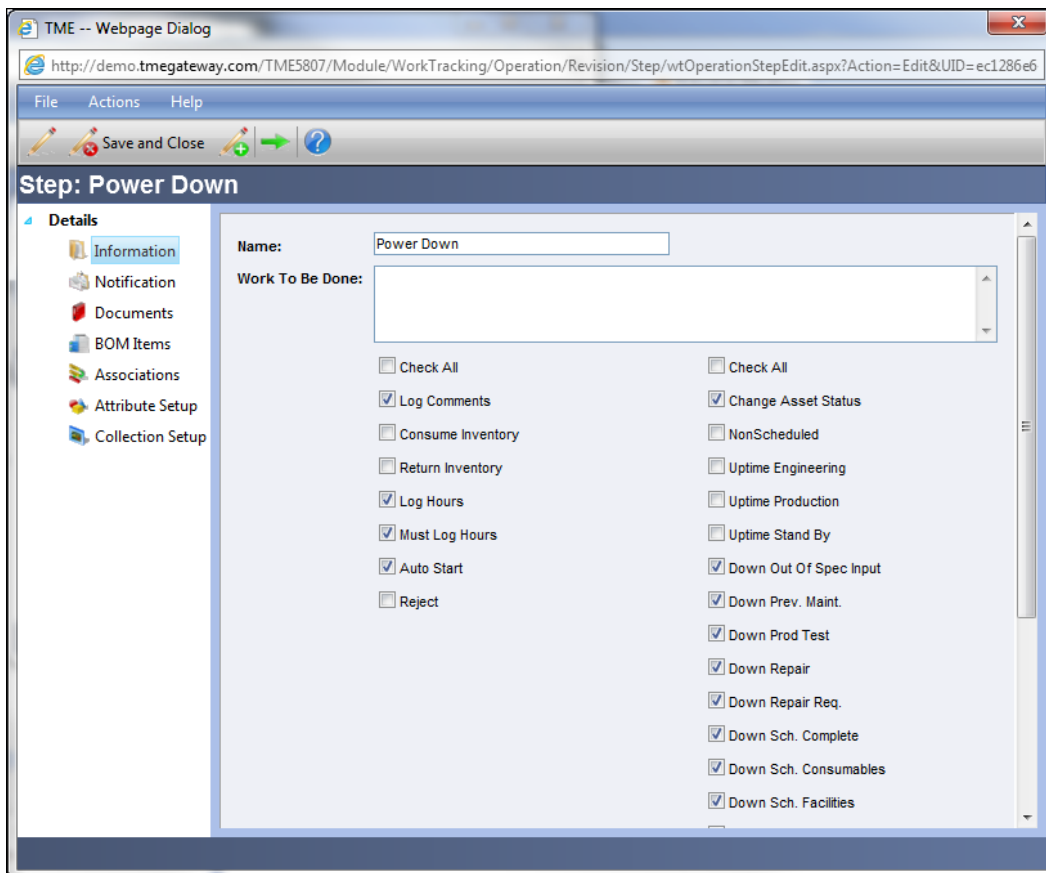


Figure 57 Step Detail Screen

Type in the Name of the Step as it is to appear on the Work Order.

Type in the Work To Be Done. This can be detailed with a full set of instructions or a simple statement of work.

Check all of the rules and actions that are to be applied/available as part of processing the Step within the Work Order. These transactions will be counted towards the Asset associated with the Step. However, if no Asset is associated to the Step, then the transactions will post to any Asset associated to the Work Order itself.

- Log Comments: User logs general Comments
- Consume and Return Inventory: Tracked and Non-tracked Inventory is consumed or returned
- Log Hours: User logs his/her or another User's Hours
- Must Log Hours: the Step cannot be Closed without any Hours logged
- Auto Start: The Start Step link is removed from the Step screen and the Start Date is set to match that of the Request Date.
- Reject: Reject Step link will be available along with the Start Step link to allow the User to Reject the Step. It will not be available if the Auto Start feature has been selected. Once a Step has been started, it cannot be Rejected.
- Change Asset Status: provides the User the ability to change the Asset status to any of the statuses that have been checked off in the list following this checkbox

Additional Links

The links for Documents and BOM Items work in the same exact fashion as on the Work Order. Once set up on the Step, they will flow into every Work Order triggered off any Process whereby the Operation containing this Step has been included. The Attribute and Collection Setup link work in the same exact fashion as on the Asset Detail Screen. See those sections within the Assets portion of Chapter 4: Asset Management and Check In/Out.

Notification Link

Specific Users can receive email/text notifications for the following events as soon as they occur: Work Tracking Process Step - Closed, Rejected, and Start. This is for every Work Order containing this particular Step. Notifications are set up in the same manner as with other Modules.

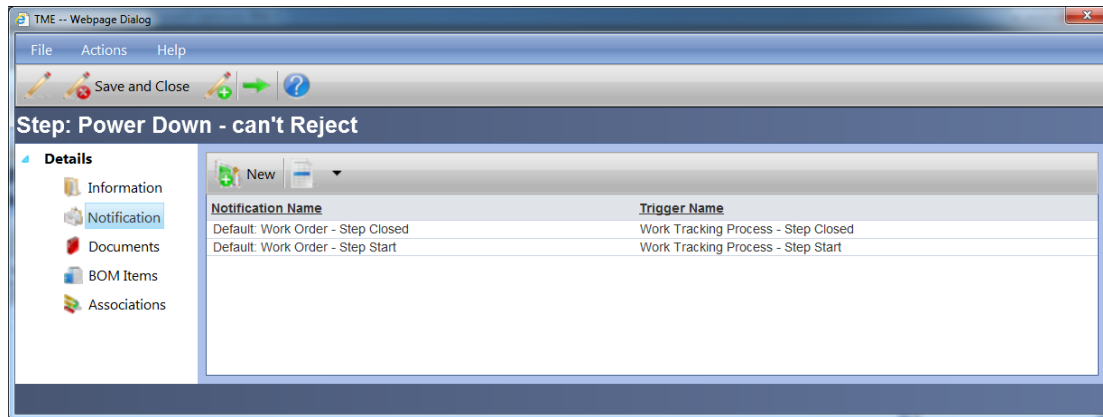


Figure 58 Step Notification Viewer

Associations Link

The Notification system within TME can be kept simple or made as complex as needed. In addition to being able to setup overall notifications for Processes, Steps can have different Notifications set up for certain or even every Step that is defined in the Operation Flow for any particular Asset.

This allows the Notification(s) to go out to different Users or Groups when the Trigger is set off by Work Orders set up for different Assets. What this means is that a single Process can be utilized to create the work orders for several different Assets that require the same work, but have different Users who are responsible for the work (or different Users who just need to be notified). An example is that for one particular step for one piece of equipment, i.e., when the lock down Step has been completed on critical Asset 5, everyone on the Production Team gets notified; but it's the Maintenance Crew in Building 1 that needs a notification that the Step for tagging Asset 5 was completed. For any other Asset, perhaps the lock down notification only needs to go to the Production Supervisor and the tagging notification to the Maintenance Supervisor.

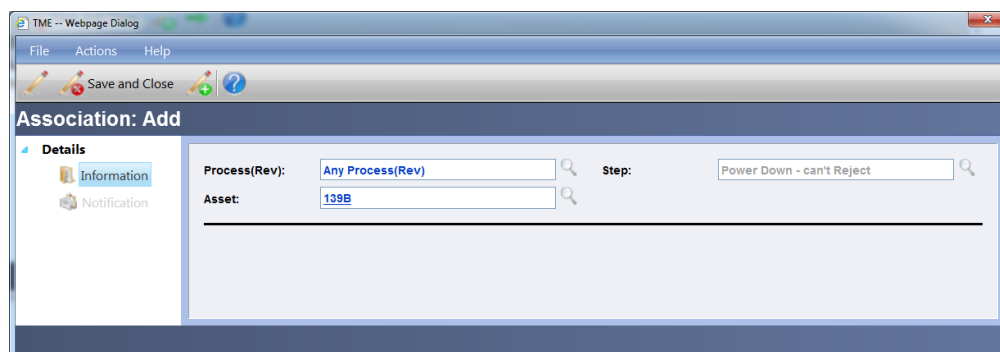


Figure 59 Add Association Screen

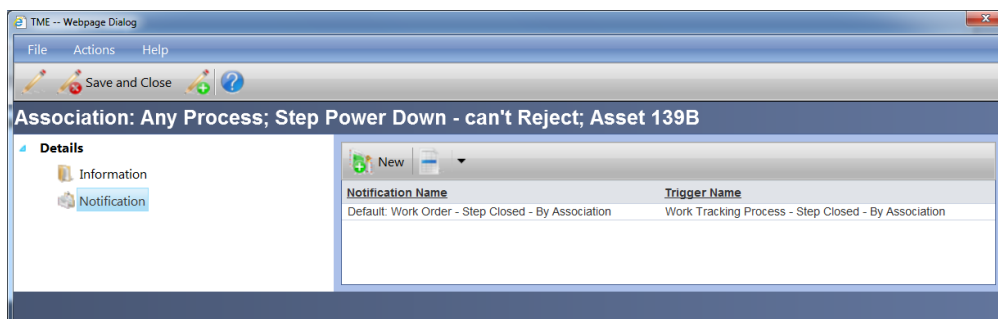


Figure 60 Notification Viewer for Single Association

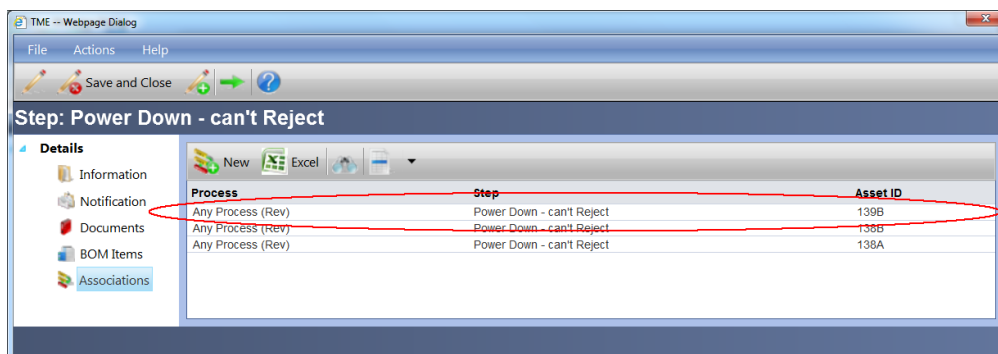


Figure 61 Association Viewer for Step

Copy Revision

To copy a Revision, double-click on the Revision to be copied. Click on Action on the Detail Taskbar and then Generate Copy. The Revision that was originally opened to be copied will close and the copy's Detail screen remains open. Edit the Revision Name on the Information screen. Make further adjustments as required.

If applicable, go to the Information screen for the Operation and make the newly created Revision, the Current Revision.

Operation Permissions


Permissions to access an Operation and work on its Steps within a Work Order are based on Access Groups. It is set up in the same manner as Permissions in other Modules.

Exercise 11:



Create three Operations, one of which contains two Revisions, each containing three Steps. The other two Operations contain one Revision, each with four Steps. Try to set up each of the Steps differently in order to see how they work once viewed on a Work Order.

Processes

New Processes can be added by clicking on the  icon.

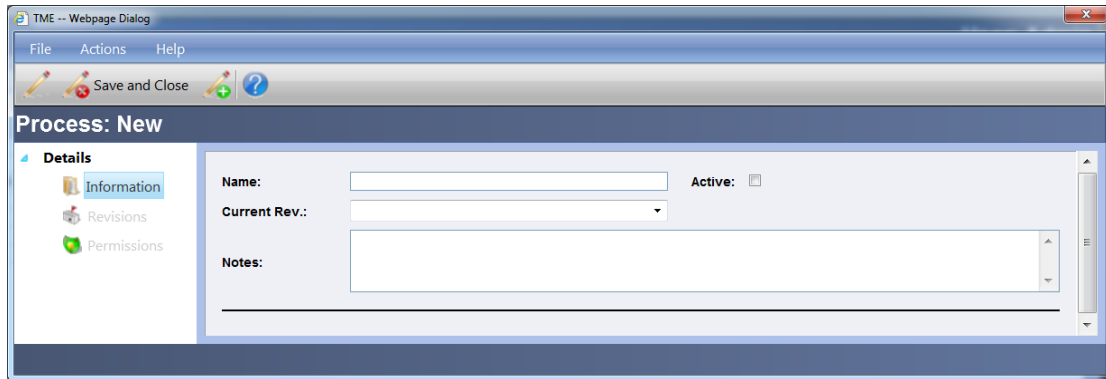


Figure 62 New Process Detail Screen

Type in the name of the Process. This is what will be visible when selecting a Process for Scheduled Work or a Work Order. Click on the Active checkbox in order for the Process to be available for selection.


NOTE: Once a Process has generated a single Work Order, it cannot be deleted. If it needs to be "retired," make it inactive by deselecting the Active checkbox on the Information screen.

If applicable, type in any Notes with regards to how, why the Process has been set up.

Process Revisions

A Process can have multiple Revisions. There are two basic reasons for this:

1. Once a Work Order has been triggered off of a Revision of a Process, the Operation Flow cannot be changed in any way. In order to be able to change the Operation Flow, a new Revision will need to be made and the older Revision(s) made Inactive.
2. More than one Revision may be active within a Process in order to keep the overall template of a Work Order, but have slightly different Operation Flows in order accommodate the needs of different Assets (i.e., different Bills of Materials, Lock Down Tag Out procedures, etc.).

Click the  icon. Once the Revision has been saved, it needs to then be selected as the Current Revision on the Information screen. As a new Revision is added, change the Current Revision selection accordingly.

The screenshot displays the 'Process Revision Detail Screen' for Revision 1. The interface includes a menu bar (File, Actions, Help) and a toolbar with 'Save and Close' and a help icon. A left sidebar lists navigation options: Information (selected), Operation Flow, Notification, Associations, Documents, BOM Items, Auto Set Attribute, Attribute Setup, and Collection Setup.

The main form area contains the following fields and options:

- Revision:** 1
- Active:** ☒
- Default Desc:** 8Hr Due Date
- Run Out Of Order:** ☐
- Category:** Hour Based
- Type:** PM
- SubCategory:** Eight
- Plan:** Qual
- Default Priority:** High
- Default Due Days:** 2
- Print Label:** [dropdown]
- Default Est. Hours:** 3
- Work To Be Done:** [text area]

Below these fields are two columns of checkboxes for various actions:

- ☐ Check All
- ☒ Log Comments
- ☒ Consume Inventory
- ☒ Return Inventory
- ☒ Log Hours
- ☒ Must Log Hours
- ☒ Auto Start
- ☐ Reject
- ☒ Show Supplier Dependent Failure
- ☒ Req. Supplier Dependent Failure
- ☒ Show Mod/Fail/Corr Act
- ☒ Req. Mod/Fail/Corr Act
- ☐ Req. Data Collection
- ☒ Auto Generate New Work Order
- ☐ Default Due Hours (Overrides Default Due Days above) [8] [0]
- ☐ Check All
- ☒ Change Asset Status
- ☒ St. NonScheduled
- ☒ St. Uptime Engineering
- ☒ St. Uptime Production
- ☒ St. Uptime Stand By
- ☒ St. Down Out Of Spec Input
- ☒ St. Down Prev. Maint.
- ☒ St. Down Prod Test
- ☒ St. Down Repair
- ☒ St. Down Repair Req.
- ☒ St. Down Sch. Complete
- ☒ St. Down Sch. Consumables
- ☒ St. Down Sch. Facilities
- ☒ St. Down Sch. Maint. Delay Supplier
- ☒ St. Down Sch. Maint. Delay User
- ☒ St. Down Sch. Maint. Delay

Figure 63 Process Revision Detail Screen


Type in the name of the Revision. This is what will be on the Process LookUp screen along with the Process Name when making a selection for Scheduled Work or Work Order.

Check the Active checkbox so that the Revision will be available on the LookUp screen.
NOTE: Once a Revision has generated a single Work Order, it cannot be deleted. If it needs to be "retired," make it inactive by deselecting the Active checkbox on the Information screen.

Type in the Default Desc. This is the Description that will come through for the Work Order itself.

Check the Run Out of Order checkbox if on the generated Work Order the Steps can be worked on in any order (provided that within an Operation itself there is not a

requirement that its Steps be run in order or that prerequisites have not been set up at the Step level).

If applicable, select a Category, SubCategory or Plan. These fields can have new entries added into the drop down menus by clicking on the  icon and typing them in (or via Tools > Options > Work Tracking, see the Settings chapter for details). These fields can be utilized to organize Work Orders to help Search or Report on various different groupings, i.e., ISO Compliancy Plan, Job Codes, etc.

Set the Default Priority and choice of Print Label. The Label is the form that gets printed in PDF format when a User clicks Print Work Order from the Work Order itself.

Determine the number of days after the creation of the Work Order that the Due Date is to be set and enter that into the Default Due Days field. Estimate the number of hours needed to complete the Work Order and enter that into the Default Est. Hours field.


Type in the Work To Be Done. This can be detailed with a full set of instructions or a simple statement of work.

Check all of the rules and actions that are to be applied/available as part of processing the Work Order (these apply to the Work Order as a whole, these transactions will be counted only towards the Asset (if any) associated with the Work Order, not any Assets associated separately to a Step).

- Log Comments: User logs general Comments
- Consume and Return Inventory: Tracked and Non-tracked Inventory is consumed or returned
- Log Hours: User logs his/her or another User's Hours
- Must Log Hours: the Work Order cannot be Closed without any Hours logged
- Auto Start: The Start Work link is removed from the Work Order screen and the Start Date is set to match that of the Request Date.
- Reject: Reject Work Order link will be available along with the Start Work link to allow the User to Reject the Work Order. It will not be available if the Auto Start feature has been selected. Once a Work Order has been started, it cannot be Rejected.
- Show Supplier Dependent Failure: the closing screen for the Work Order will contain Supplier Dependent Failure Yes or No checkboxes for the User to select as applicable
- Req. Supplier Dependent Failure: the Work Order cannot be Closed unless either the Yes or No checkbox for Supplier Dependent Failure has been selected

- Show Mod/Fail/Corr Act: the closing screen for the Work Order will contain a series of drop-down lists for the selection of the Module that failed, what was the Failure, and what was the Corrective Action. The drop-downs are filtered based on the SubCategory of the Asset attached to the Work Order. The closing selections are stored in the database and allow for the development of a Pareto Report on the most common Modules, Failures and Corrective Actions. These drop-down lists are managed via Tools > Options > Asset Management. See the Administrator Guide - Tools in Online Help for more details.
- Req Mod/Fail/Corr Act: the Work Order cannot be Closed unless all three drop-down lists have had selections made
- Req. Data Collection: data must be entered against a Data Collection associated to the Work Order in order to be able to close the Work Order; if not entered, the Close Work Order link does not appear
- Auto Generate New Work Order: the Work Order will automatically trigger another Work Order for the same Asset ID upon being closed with a Due Date calculated at the Close Date/Time plus the number of hours as defined in the Default Due Hours fields. The number of hours may exceed 24 and this will override any entry for the Default Due Days higher up on the screen. This feature is dual purpose by providing a Due Date calculated in hours (can have less than a day to complete a Work Order) and automatic triggering for Work Orders such as Qualifications that need to be continuous.
- Change Asset Status: provides the User the ability to change the Asset status to any of the statuses that have been checked off in the list following this checkbox

Operation Flow Link

The Operation Flow of a Process sets the order of the Steps that will be on the Work Order. To set up an Operation Flow, click on the Operation Flow link on the Revision Detail screen. Click the  icon.

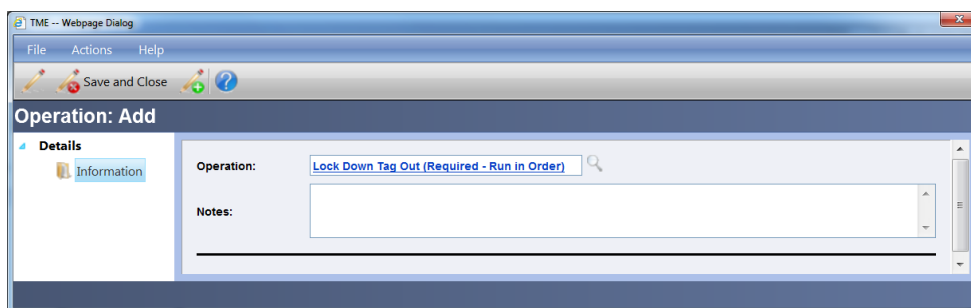




Figure 64 Add Operation to Process Operation Flow

Choose the first Operation in the flow by clicking on the  icon to open the Operation Revision LookUp screen. Select the Operation desired. The screen will disappear and the selected Operation is now included as the link. Type in any Notes for future reference if applicable. Click Save and New to add the Next Operation. Repeat as

needed and then Save/Close with the final Operation. If additional Operations need to be added after closing the screen, click on the  icon.

Once all of the Operations have been selected, the User may click on the Up or Down arrow icons to change the order of the Operations (order does matter if Process requires the Operations and Steps to be worked on in order within the Work Order).

NOTE: Once a Revision has generated a single Work Order, the Operation Flow cannot be changed. If it needs to be edited, make a copy of the Revision to create a new one from which to make changes and make the old one inactive by deselecting the Active checkbox on the Information screen.

Additional Links

The links for Documents and BOM Items work in the same exact fashion as on the Work Order. Once set up on the Process, they will flow into every Work Order triggered off of it. The Attribute and Collection Setup link work in the same exact fashion as on the Asset Detail Screen. See Chapter 10: Settings for more detail.

Notification Link

Specific Users can receive email/text notifications for the following events as soon as they occur: Work Tracking Process Closed, Created, Rejected, Reopened, and Start. This is for every Work Order created off of this Process. Notifications are set up in the same manner as with other Modules.

Associations Link

The Notification system within TME can be kept simple or made as complex as needed. Just as Steps can have Associations to set up different Users to receive Notifications for the Steps worked on different Assets, so can the full Process itself.

This allows the Notification(s) to go out to different Users or Groups when the Trigger is set off by Work Orders set up for different Assets. What this means is that a single Process can be utilized to create the work orders for several different Assets that require the same work, but have different Users who are responsible for the work (or different Users who just need to be notified). An example is that for one particular work order for one piece of equipment has been completed (i.e., on critical Asset 5), everyone on the Production Team gets notified; but it's only the Production Supervisor in Building 1 that needs a notification that the same type of work order was completed on another Asset (i.e., Asset 17). To set up these types of Notifications, click on the Associations link on the Revision Detail screen.

Auto Set Attribute Link

This feature will set a constant or add/subtract values to an Asset Attribute (number type only). It is set to take place at either the start or completion of the Work Order for a given Asset.

The Attribute is created as a Variable in a Variable Group in the Settings Module (See Chapter 10: Settings). It is then associated to one or more Assets (See Chapter 4: Asset Management – Check In/Out). The Process is then set up with the Auto Set Attribute. As Work Orders are generated/closed for any given Asset, the Attribute Value for that Asset is changed according to the Auto Set configuration. See the following Figures for the flow.

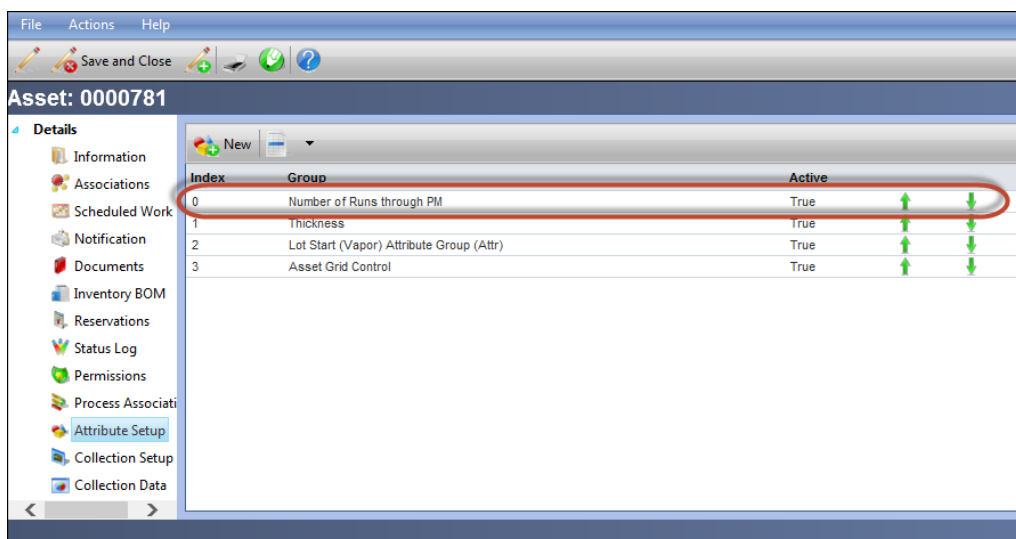


Figure 65 Attribute Set Up for Asset

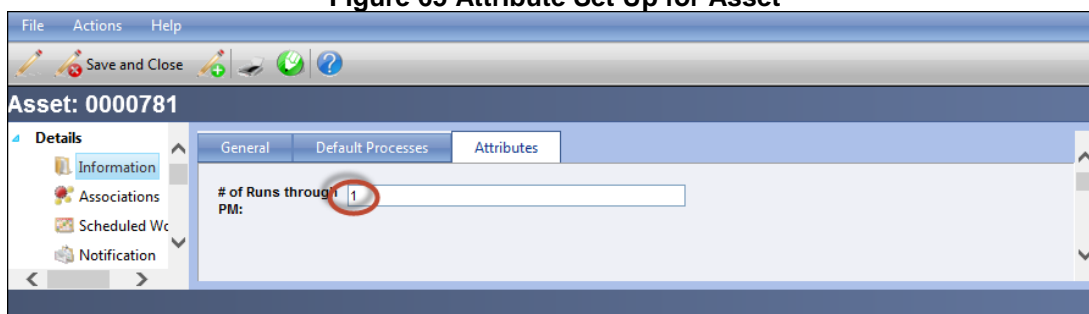


Figure 66 Attribute Value Displayed on Asset Detail Screen

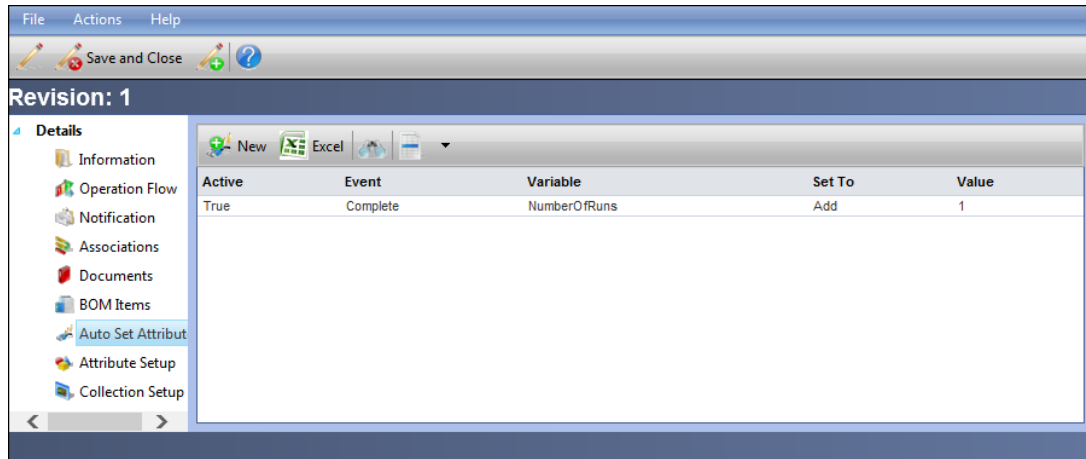


Figure 67 Auto Set Attribute Viewer

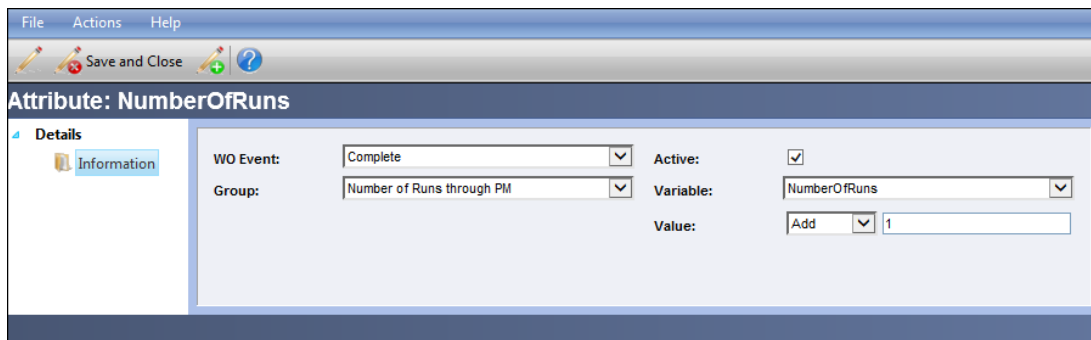


Figure 68 Auto Set Attribute Detail Screen

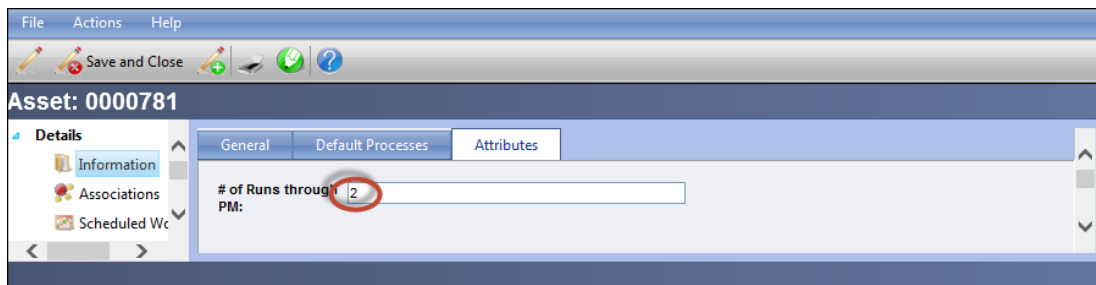


Figure 69 Attribute Value Change Upon Completion of Work Order

Copy Revision

To copy a Revision, double-click on the Revision to be copied. Click on Action on the Detail Taskbar and then Generate Copy. The Revision that was originally opened to be copied will close and the copy's Detail screen remains open. Edit the Revision Name on the Information screen. Make further adjustments as required.

If applicable, go to the Information screen for the Process and make the newly created Revision, the Current Revision.

Exercise 12:



Create a Process utilizing the three Operations set up in the previous exercise. Generate a Work Order utilizing this Process. Complete the Work Order utilizing as many features as possible.