



Facilities CMMS PM Scheduling Process

Facilities Management & Logistics (FM&L)

Jefferson Lab (JLab) Facilities CMMS PM Scheduling Process

Document Change Control – Below details a history of the revisions made to this document:

Revision Number	Date of Issue	Author(s)	Brief Description of Change
1.0	3/28/2023	Linda Sippel	Initial Draft

Jefferson Lab (JLab) Facilities CMMS PM Scheduling Process

CMMS Preventive Maintenance (PM) Scheduling Process – Below details the process for JLab facilities PM scheduling in the CMMS:

- The JLab Facilities Computerized Maintenance Management System (CMMS) supports routine scheduled preventive maintenance to be performed using work orders automatically generated by the system at regular intervals. It consists of a work type, a work group, a PM owner, an asset or group of assets (in a route), a job plan, a frequency number with a frequency unit (day, week, month, or year) and a due date. See **Appendix C** for work groups and work types.
- In the CMMS **PM module**, PMs are grouped by location using the naming convention: **location-asset type-frequency**, where the PM frequency of work order generation is denoted by the following letter/number/combination: **A**=annually, **SA**=semi-annually, **Q**=quarterly, **B**=bi-monthly, **M**=monthly, and **W**=weekly. There are also multiple year frequencies such as: **3Y**=every 3 years and **5Y**=every 5 years. See **Appendix A** for asset types and **Appendix B** for locations.
- Two statuses are used for CMMS PMs: **ACTIVE** = scheduled to generate a PM work order and **INACTIVE** = not currently scheduled to generate a PM work order. When you create a PM it automatically gets saved in **DRAFT** status, which you must then change to be **ACTIVE**.
- The CMMS Administrator may generate a PM work order at any time by selecting **Generate Work Orders** from the “Select Action” menu and unchecking the **Use Frequency Criteria** box and then clicking on **OK**. You must then update the **Target Finish Date** on all generated PM work orders and correct the **Estimated Next Due Date** on the PM’s **Frequency** tab to correspond with the time span of the PM that would be expected had it automatically generated the PM work orders (ie: 3 months for quarterly, 6 months for semi-annual, 1 year for annual, etc.).
- A single asset may be referenced, or for multiple assets, a route is created and referenced in the PM. For multiple assets to be grouped similarly at a location, they are listed in a route in the CMMS **Route module** using a similar naming convention to the PM name. Routes have no status, but do provide 3 choices to select for generating PM work orders:
 - **Child Work Orders** = new work orders associated with the PM work order in a parent-child relationship are created for each asset listed in the route and are listed in the PM work order’s **Plans** tab in the “**Children of Work Order ...**” section.
 - **Entries in the Work Order’s Multi Asset, Location and CI Table** = assets in the route are listed in the PM work order’s “**Multiple Assets, Locations and CIs**” section on the **Work Order** tab.
 - **Work Order Tasks** = assets in the route are listed as a sequence of tasks in the PM work order’s “**Tasks for Work Order ...**” section on the **Plans** and **Actuals** tabs.
- Job plans for tasks to be performed during a particular PM are created in the **Job Plan module** with a name representing the asset, frequency, and/or activity (such as inspection or calibration). Four statuses are used for CMMS Job Plans: **ACTIVE** = an active version of the job plan available for selection in a PM, **INACTIVE** = a non-active job plan, **PNDREV** = a pending revision status between REVISED and ACTIVE where changes can be made until the status is changed to ACTIVE, and **REVISED** = a version-controlled job plan copy containing changes made previously to the ACTIVE job plan.
- In the PM, on the **PM** tab in the middle “**Details**” section on the right is the **Counter** field. It is used to denote where the PM is in its work order generation run cycle (starting at 0 and incrementing by 1 after each run). For multiple job plans such as a quarterly PM, go to the **Job Plan Sequence** tab and you will see that there is a quarterly job plan with a sequence number of 1 and an annual job plan with a sequence of 4. The value in the **Sequence** field means that this job plan is used on every *n*th work order generated from the PM, where *n* is the sequence number. The job plan with the highest sequence number that divides evenly into the value in the **Counter** field is selected. If no sequence number meets this criterion, the primary job plan (sequence number 1) is used.
- On the **PM** tab you can tell which job plan is selected by viewing the name listed in the middle “**Work Order Information**” section “**Job Plan**” field. You can change the **PM Counter** field number by clicking on the “**Select Action**” menu, selecting “**Set PM Counter**”, put in a new value in the “**New PM Counter**” box and hit “**OK**”. The **Counter** field will be updated and possibly the **Job Plan** field as well.
- A work order with a **PM** work type (known in this document as a **PM work order**) is automatically created by the CMMS system on the scheduled release date (Earliest Next Due Date – Lead Time) in the **Work Order Tracking module** (no service request is generated). The work order owner regularly reviews the scheduled work and assigns a work lead.

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- Work orders with the following statuses are considered to be open and available for work: APPR, WAPPR, WMATL, WPCOND, and WSCH – see **Appendix D** for details.
- Each month, the upcoming PMs to be generated as well as the open PM work orders coming due need to be reviewed for the FME (Facilities Maintenance Electrical) and FMM (Facilities Maintenance Mechanical) work groups, due to the number and complexity of their PMs. A report application of **Upcoming PMs for Group** is available here: <https://mis.jlab.org/mis/apps/facilities/pmsForGroup.cfm> and queries showing open PM work orders to be reviewed are available in the **Work Order Tracking module's Query** drop down menu box in the upper left corner.
- Each month meetings are held with the FME & FMM work group PM coordinators to review the list of open and upcoming PM work orders as well as any open pending service requests.
- In one window show the **Upcoming PMs for Group** report by selecting the “FME” or “FMM” group and the next month start and end dates and then click on the **Search in Browser** button to scroll through the list.
- In another window, select the **Review FME Open PM Work Order Status** or **Review FMM Open PM Work Order Status** query in the **Work Order Tracking module** to see if there are any parent PM work orders that need to be completed or canceled for the work group based on the PM frequency in the description and the target finish date during that month.
 - Sort the list by clicking on the Target Finish column heading to show the oldest work orders at the top.
 - If needed, remove work orders from the list containing service request numbers by typing **~null~** in the empty box below the **SR #** field or type **!=~null~** to show only those work orders.
 - Compare the target finish date to the current date along with the work order description. Annual PM work orders will be due 1 year after the target finish date, semi-annuals will be due 5 months after the target finish date (comprising 6 months including the first month), quarterlies will be due 2 months after the target finish date (comprising 3 months including the first month), bi-monthlies will be due 1 month after the target finish date (comprising 2 months including the first month), and monthlies will be due each month.
 - On the last day each month after 5pm, the CMMS Administrator reviews the list of open parent PM work orders for all work groups to see which ones need to be closed that month based on the work order description and target finish date.
 - If any work orders show child work orders on the **Plans** tab, review the list to see which ones are set to **COMP** for completed work. If all are complete, then this work order is complete and its status can be set to **COMP**. If any child work orders are missing labor hours on the **Actuals** tab, then those work orders are to be set to **CLOSE** to indicate the CMMS Administrator closed the child work order due to no information on the status of the work.
 - If any child work orders have a **COMP** status, then the parent work order is set to **COMP**, even if other child work orders have a **CLOSE** status.
 - If all child work orders are open and a selected set of child work orders have no labor hours, all will be set to a **CLOSE** status along with the parent work order.
 - If any parent work orders with no child work orders show labor hours on the **Actuals** tab, then the status may be set to **COMP**. If there are no hours, then set the status to **CLOSE** to indicate the CMMS administrator closed the work order due to no information on the status of the work.
 - Review any open FMM Service Work (**SW**) work orders using the **Incomplete FMM Mechanical Area Monthly Inspections** and the **Incomplete Mnthly/Qtrly FMM PM/SW WO's** queries to close or complete these work orders as well.
 - If a quarterly PM falls within the same time as an annual PM for the same location, the quarterly will be set to **CAN** and a log will state it is not needed for this quarter due to the annual PM to be worked. PMs like this will not be counted in the monthly metrics report.
 - On the first day of the following month, run the **Find Duplicate PMs** and **Find Duplicate SWs** queries, sorting on the Description field to look through the list for completing or closing any duplicate PM/SW work orders missed from the previous month. Make sure the status date is changed to the previous month before closing or completing them.

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- Go to the **Preventive Maintenance** module and select the **Active PMs** query. Except for weekly and specialty inspection PMs, all equipment maintenance PMs should have a due date on the 28th of a month. For those PMs with an **Estimated Next Due Date** not on the 28th, you will update the **Extended Date** field to adjust the due date. For those PMs needing a due date adjustment, click on the **PM** name, click on the **Frequency** tab, and type in the new due date in the **Extended Date** field, click on the **Save PM** icon, then check the **Adjust Next Due Date?** Box and click on **Save PM** again.

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Appendix A - Use the following example list to determine the **asset type** to be used when naming a PM in the CMMS:

Asset Type	Description	Managing Work Group
AAD	Audible Alarm Device	Fire Protection
AC	Air Compressor Fan Coil	Fire Protection Mechanical
ACC	Air Cooled Condenser (Refrigerant Coil)	Mechanical
ACU	Air Conditioning Unit	Mechanical
ACWP	Acid Chilled Water Pump	Mechanical
AHU	Air Handling Unit	Mechanical
ASCP	Air Sampling Control Panel	Fire Protection
ASSD	Air Sampling System Detector (VESDA)	Fire Protection
ATS	Automatic Transfer Switch	Electrical
AV	Alarm Valve	Fire Protection
AV/CH	Alarm Valves / Check Valves on Riser	Fire Protection
B	Boiler	Mechanical
BFP	Backflow Preventer	Mechanical
BS	Branch Selector	Mechanical
CAM	Security Camera	Electrical
CATF	Clean Agent/Total Flooding System	Fire Protection
CH	Chiller	Mechanical
CHH	ARC Chiller	Mechanical
CMS	Panelboard	Electrical
CP	Panelboard	Electrical
CRAC	Computer Room Air Conditioning Unit (Direct Expansion)	Mechanical
CRAH	Computer Room Air Handling Unit (Chilled Water Air Handling Unit)	Mechanical
CRN	Crane	Structural
CRU	Computer Room Unit	Mechanical
CRYO	Panelboard	Electrical
CT	Cooling Tower Cell	Mechanical
CTBS	Cooling Tower Basin Strainer	Mechanical
CTF	Cooling Tower Fan	Mechanical
CTP	Cooling Tower Pump	Mechanical
CTS	Cooling Tower Strainer	Mechanical
CV	Check Valve Control Valve	Fire Protection
CWP	Chilled Water Pump	Mechanical
DD	Desiccant Air Dryer	Mechanical
DDC	Direct Digital Control	Mechanical
DHU	Dehumidification Unit	Mechanical
DOR	Interior/Exterior Door	Structural
DS	Disconnect/Distribution Switch	Electrical
DSD	Duct Smoke Detector	Fire Protection
DWR	Dewar	Mechanical
ECB	Enclosed Circuit Breaker	Electrical
EAC	Exhaust Air Control	Mechanical
EF	Exhaust Fan	Mechanical
ELV	Elevator	Fire Protection
EMLIGHT	Emergency/Exit Light	Electrical
ERU	Energy Recovery Unit	Mechanical

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ESEF	End Station Exhaust Fan	Mechanical
EUH	Electric Unit Heater	Mechanical
EV	Electric Vehicle	Vehicles
EVC	Electric Vehicle Charging Station	Electrical
EYE	Eyewash/Safety Shower	Mechanical
F	Fan	Mechanical
FACP	Fire Alarm Control Panel	Fire Protection
FC	Fire Connection	Fire Protection
FCU	Fan Coil Unit	Mechanical
FDC	Fire Department Connection	Fire Protection
FDU	Fiber Distribution Unit	Electrical
FL	Incoming Fire Line	Fire Protection
FPB	Fan Powered Box	Mechanical
GEN	Generator	Electrical
GTP	Geothermal Pump	Mechanical
GTW	Ground Test Well	Electrical
GWP	Groundwater Pump	Mechanical
HD	Heat Detector	Fire Protection
HEX	Heat Exchanger	Mechanical
HP	Heat Pump	Mechanical
HPAF	High Power Amplifier Fan	Mechanical
HPP	High Pressure Pump	Mechanical
HPU	Heat Pump Unit	Mechanical
HRP	Heat Recovery Pump	Mechanical
HRV	Heat Recovery Ventilation	Mechanical
HS	Hood System	Mechanical
HTAPE	Heat Trace Tape	Electrical
HUM	Humidifier	Mechanical
HVAC	Heating, Ventilation, and Air Conditioning Pnlbrds	Electrical
HWP	Hot Water Pump	Mechanical
HYDRANT	Fire Hydrant	Fire Protection
ICE	Ice Machine	Mechanical
IDF	Intermediate Distribution Frame	Electrical
IPC	Integrated Power Center	Electrical
IU	Independent AC Unit	Mechanical
L	Lighting Panelboard	Electrical
LAV	Lavatory (Bathroom Sink)	Structural
LCWF	Low Conductivity Water Filter	Mechanical
LCWP	Low Conductivity Water Pump	Mechanical
LDR	Ladder	Structural
LHD	Linear Heat Detector	Fire Protection
LP	Lightning Protection	Electrical
LS	Lift Station	Mechanical
M	Mechanical Panelboard	Electrical
MAU	Make-up Air Unit (Supply Air)	Mechanical
MCB	Main Circuit Breaker	Electrical
MCC	Motor Control Center	Electrical
MDF	Main Distribution Frame	Electrical
MDP	Main Distribution Panel	Electrical

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MS	Manual Pull Station	Fire Protection
MV	Medium Voltage	Electrical
MVMCC	Medium Voltage Motor Control Center	Electrical
MVSG	Medium Voltage Switchgear	Electrical
MVSW	Medium Voltage Switch	Electrical
OAU	Outside Air Unit	Mechanical
OHD	Overhead Door	Structural
OME	Oil Mist Eliminator	Mechanical
OWS	Oil Water Separator	Mechanical
P	Power Panelboard	Electrical
PA	Pre-Action Valve	Fire Protection
PACU	Packaged Air Conditioning Unit	Mechanical
PAD3	PAD-3	Fire Protection
PB	Push Button Smoke Removal System	Fire Protection
PDU	Power Distribution Unit	Electrical
PH	Fire Fighter Phone Station	Fire Protection
PIV	Post Indicator Valve	Fire Protection
PNLB	Panelboard	Electrical
PP	Patch Panel	Electrical
PCH	P Chiller	Mechanical
PRCWP	PR Chilled Water Pump	Mechanical
PTAC	Packaged Terminal Air Conditioner	Mechanical
RCC	Remote Control Center	Fire Protection
RD	Refrigerated Dryer	Mechanical
RF	Return Air Fan Rack Fan	Mechanical
RH	Roof Hatch	Structural
RHU	Radiant Heater Unit	Mechanical
RM	Refrigerant Monitor	Mechanical
ROAD	Road	Structural
ROOF	Roof	Structural
RTU	Roof Top Air Unit	Mechanical
RU	Refrigeration Unit	Mechanical
SAF	Supply Air Fan	Mechanical
SD	Smoke Detector	Fire Protection
SEF	Scrubber Exhaust Fan	Mechanical
SHP	Sprinklers & Associated Piping	Fire Protection
SP	Systems Panelboard	Electrical
SUB	Substation	Electrical
SW	Switch	Electrical
SWBD	Switchboard	Electrical
SWGR	Switchgear	Electrical
TA-EF, TB-EF, TC-EF	Truck Access Exhaust Fan (Halls A, B, C)	Mechanical
UH	Unit Heater	Mechanical
UPS	Uninterruptible Power Supply	Electrical
UR	Urinal	Structural
US	Utility Sink (Janitorial)	Structural
VACP	Vacuum Pump	Mechanical
VAV	Variable Air Volume Box	Mechanical

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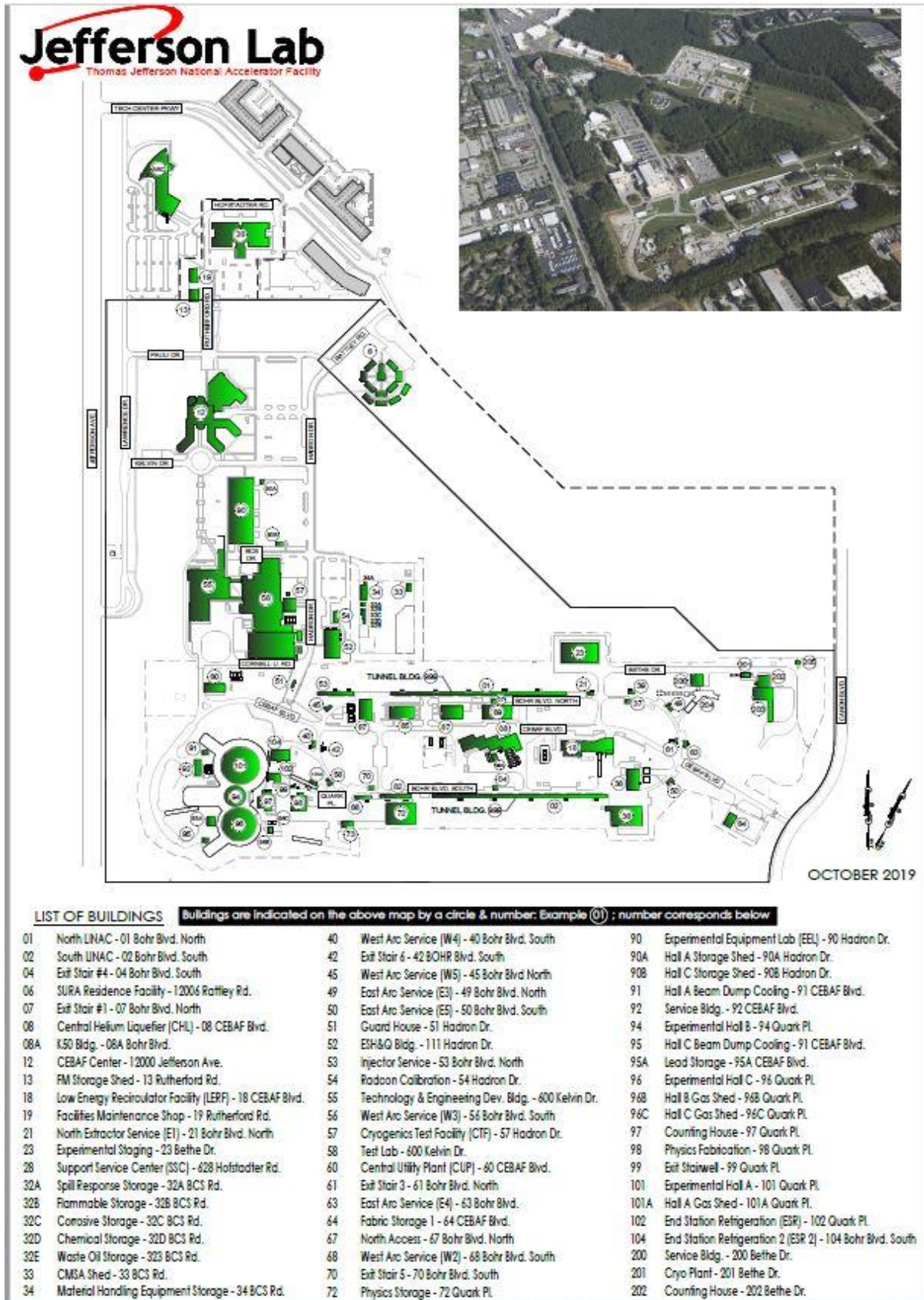
VFD	Variable Frequency Drive	Mechanical
VIU	Variable Refrigerant Flow (VRF) - Indoor Unit	Mechanical
VLV	Distribution Valve	Mechanical
VOU	Variable Refrigerant Flow (VRF) - Outdoor Unit	Mechanical
VRFC	Variable Refrigerant Fan Coil	Mechanical
WATER METER	Water Meter	Engineering
WC	Water Closet (Toilet)	Structural
WFN	Water Fountain	Structural
WFS	Water Flow Switch	Mechanical
WH	Water Heater (Electric, Gas)	Mechanical
WS	Wet Standpipe	Fire Protection
WU	Window Unit	Mechanical
WWHP	Water-Water Heat Pump	Mechanical
XFMR	Transformer	Electrical

 = Acronym is used for multiple asset types

Note: for those with access, this list may be viewed/updated here: <M:\facilities\Software\Maximo\Acronyms for Assets>.

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Appendix B – Use the JLab Site Plan below to determine the location for a PM in the CMMS:



Note: site plan is located at <m:\facilities\Master Documents\Drawings\Site Plans>. See next page for more locations.

The following are non-numbered locations, offsite warehouses, or non-specific site locations:

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ARC = Applied Research Center

AWN = Acid Waste Neutralization

BC2 = Blue Crab Road Warehouse (offsite)

CHW = Chilled Water Distribution

CMSA = Central Materials Storage Area

COMM = Communications Distribution

CT = Cooling Towers (associated with bldgs: 08, 200, 38, 57, 58, 67, & 92)

CW = Condenser Water Distribution

DITCHES = Ditches

E = Equipment Costpoint Costs (associated with bldgs: 101, 203, 94, 96, & 999)

EMSA = East Materials Storage Area

ELEC = Electrical Distribution

EVC = Electric Vehicle Charging Stations

FENCING = Security Fencing

KIOSKS = Smoking Kiosks

LCW = Low Conductivity Water Distribution

LIGHTS = Street Lights

NGAS = Natural Gas Distribution

PARKING = Parking

POND-E = Retention Pond – East Side of JLab

POND-N = Retention Pond – North Side of JLab

RM = Boundary Radiation Monitors

ROADS = Roads

SEWER = Sanitary Sewer

SIDEWALK = Sidewalks

STRMPIPE = Stormwater Piping

TS = Thimble Shoals Warehouse

WATER = Potable Water Distribution

WB = Warwick Blvd Warehouse (offsite)

WELLS = Ground Water Monitoring Wells

WMSA = West Materials Storage Area

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Appendix C – Use the following lists to determine the **work group** and **work type** to be assigned to a PM in the CMMS:

Work Groups	Description	Group Default Work Order Owner	PM Coordinator(s)
FM	Facilities Management	David Fazenbaker	Tracy Draine / Linda Sippel
FME	Electrical	Todd Kujawa	Todd Kujawa / Howard Dunlap
FMENG	Engineering	Linda Sippel	Tracy Draine / Linda Sippel
FMFS	Fire Protection	Tim Minga	Lee Johnson / Robert Myles
FMM	Mechanical	Mike Sprouse	Mike Sprouse / Bobby Simone
FMO	Facilities Maint. & Ops	Wayne Williams	Wayne Williams / Al Porto
FMO-MH	Material Handling	Joe Thomas	Joe Thomas
FMO-P	Plumbing	Wayne Williams	Wayne Williams / Al Porto
FMO-S	Structural	Wayne Williams	Wayne Williams / Al Porto
FMO-VG	Vehicles	Joe Thomas	Joe Thomas
FMSS	Security & Services/ACS	Mike Lewellen	Mike Lewellen / Russell Pitts
LOCKS	Keys & Locks	Wayne Williams	Wayne Williams / Al Porto
PROP	Property	Jay Draughn	Jay Draughn / Jerry Mitchell

Work Types	Description
CM	Corrective Maintenance
CMGT	Construction Management
CP	Capital Project
CSTN	Construction
DSGN	Design
MATL	Material
MOD	Modernization
PM	Preventive Maintenance
PMF	PM Find (ie: CM)
SOW	Scope of Work
STDY	Study
SW	Service Work

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Appendix D – Use the following lists to denote the open **PM work orders** in the CMMS:

Work Order Statuses	Description
APPR	Approved for work
WAPPR	Waiting for work approval
WMATL	Waiting for material
WPCOND	Waiting for facility/work area access (plant conditions)
WSCH	Waiting for work to be scheduled

- **APPR** – work approved status changes available: CANCEL-NOACCESS, CANCEL-NR, CLOSE, COMP, FLDWRKCOMP, WAPPR, WMATL, WPCOND, and WSCH
- **WAPPR** – waiting approval status changes available: APPR, CAN, CANCEL-NOACCESS, CANCEL-NR, CLOSE, COMP, FLDWRKCOMP, WMATL, WPCOND, and WSCH
- **WMATL** – waiting material status changes available: CANCEL-NOACCESS, CANCEL-NR, CLOSE, COMP, FLDWRKCOMP, and WAPPR
- **WPCOND** – waiting plant conditions status changes available: APPR, CANCEL-NOACCESS, CANCEL-NR, COMP, FLDWRKCOMP, WAPPR, WMATL, and WSCH
- **WSCH** – waiting scheduling status changes available: APPR, CANCEL-NOACCESS, CANCEL-NR, COMP, FLDWRKCOMP, WAPPR, WMATL, and WPCOND