

# Facility Procedures Manual



## JCC Planned Activities and Preventative Maintenance Standards







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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>A1 Access Doors, Gates and Sally Ports Monthly PM Procedures</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			A1-M

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of the Access Doors, Gates and Sally Ports Program is to ensure that all such facility access and egress systems are maintained in such a manner as to ensure the security of JCC facilities.
<i>Scope:</i>	This program includes all access doors, vehicle and pedestrian gates, and sally ports at prisoner holding facilities.
<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this program.
Maintenance Tech's:	Qualified building engineers will perform regular inspections of access doors, gates and sally ports, and conduct reactive and annual preventative maintenance to ensure continuing operation of such systems.
Service Provider:	The Service Provider shall propose service schedules prior to implementation. The JCC shall review all service schedules.



<b>Section 5: General Requirements</b>		<i>The following sections demonstrate examples of common tasks with relative standards for their performance. The sections are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations for servicing access doors, gates and sally ports.</i>
<b>Item</b>	<b>Requirement</b>	
1.	The service provider will conduct monthly inspections of all access doors, gates and sally ports to identify and correct deficiencies. Operation of motors is to be observed. Any indications of a failing motor or other performance concerns will be documented, and a work order will be opened to repair the deficient system(s).	

<b>Section 6: Additional Requirements</b>		<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
<b>Item</b>	<b>Requirement</b>	
1.	<p><b>Service Schedule</b></p> <p>Services will be performed by the Contractor during regular hours of operation in the various buildings, except when special conditions require servicing to be done when a building or area is vacated after regular working hours or on weekends. A service schedule shall be proposed and approved by the JCC prior to implementation.</p>	

<b>Section 7: Cost Basis</b>		
Access Doors, Gates and Sally Ports Program	TBD.	





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>A1 Access Doors, Gates and Sally Ports Annual PM Procedures</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
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<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this program.
Maintenance Tech's:	Qualified building engineers will perform regular inspections of access doors, gates and sally ports, and conduct reactive and annual preventative maintenance to ensure continuing operation of such systems.
Service Provider:	The Service Provider shall propose service schedules prior to implementation. The JCC shall review all service schedules.



<b>Section 5: General Requirements</b>		<i>The following sections demonstrate examples of common tasks with relative standards for their performance. The sections are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations for servicing access doors, gates and sally ports.</i>
<b>Item</b>	<b>Requirement</b>	
1.	The service provider will conduct monthly inspections of all access doors, gates and sally ports to identify and correct deficiencies. Operation of motors is to be observed. Any indications of a failing motor or other performance concerns will be documented, and a work order will be opened to repair the deficient system(s).	
2.	On an annual basis, all access doors, gates and sally ports will be lubricated and adjusted so that operation is maintained within design standards.	

<b>Section 6: Additional Requirements</b>		<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
<b>Item</b>	<b>Requirement</b>	
1.	<b>Service Schedule</b>  Services will be performed by the Contractor during regular hours of operation in the various buildings, except when special conditions require servicing to be done when a building or area is vacated after regular working hours or on weekends. A service schedule shall be proposed and approved by the JCC prior to implementation.	

<b>Section 7: Cost Basis</b>		
Access Doors, Gates and Sally Ports Program	TBD.	



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H1 Air Cooled DX (Split System) Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
	Roof (Bldg Exterior)		HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Heat Pumps	Packaged Heat Pumps	23-33 17 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H1-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the asset. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heating and cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO will be used after initial operating inspection is complete.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided)
			<input type="checkbox"/> Impalement
			<input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
			Noise hazard.
Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.			
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use arc flash PPE when taking voltage and amp measurements.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	PM tasks require use of a magnahelic, multimeter and thermocouple.
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of ladders and/or fall arrestor safety equipment may be required to access equipment.
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)
			Use nitrile gloves when cleaning condensate pan.
			Use hearing protection during operational equipment inspection.
	Housekeeping		Clean up area upon completion of PM procedure.
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>		
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space <input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of electrical shock when taking multimeter readings.</p> <p>Risk 2: There is a risk of chemical exposure when cleaning the condensate pan.</p> <p>Risk 3: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 4: Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 5: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>



# Maintenance Operations Procedure

Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use arc flash PPE when taking voltage and amperage readings.</p> <p>Contingency Plan 2: Use nitrile gloves to provide protection from chemical exposure while cleaning the condensate pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 3: Use hearing protection during operational inspections.</p> <p>Contingency Plan 4: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 5: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>
Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	<p>Notify Facility Manager when PM procedure:</p> <p>Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p> <p>Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p>
CMMS Administrator	<p>Notify CMMS Administrator when PM procedure:</p> <p>Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____</p>

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
<p>NOTES:</p> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>				
Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			



<p><b>The following tasks detail specific inspections to be conducted while unit is in operation. Exercise caution when accessing an energized unit.</b></p>			
<p><b>5.</b></p>	<p><b>Operational Overview</b></p>		
	<p>Note current outside air temperature and weather conditions.</p>		
	<p>Temp: __ Weather:</p>		
	<p>Listen and feel for any abnormal vibration or noise. If noted, record on the work order.</p>		
	<p>Safely open the control access panel. Be very careful as this area is energized.</p>		
	<p>Check leak detection system and record readings in work order. If leaks are discovered, a separate work order will be opened to address.</p>		
	<p>Verify all service lamps are working. Replace, as needed.</p>		
	<p>Using a multimeter, check and record the voltage and amperage for the compressor while unit is in operation.</p>		
<p><b>6.</b></p>	<p><b>LO/TO</b></p>		
	<p>Turn the unit off, shut off breaker [panel and breaker number], and follow proper lockout/tag out procedures to deenergize the unit.</p>		
<p><b>7.</b></p>	<p><b>Coils</b></p>		
	<p>Inspect coils for cleanliness. Note any oily spots as potential refrigerant leaks.</p>		
<p><b>8.</b></p>	<p><b>Controls</b></p>		
	<p>Inspect wiring and all connectors, looking for discoloration or loose fittings connections.</p>		
	<p>Inspect and clean VFD.</p>		
	<p>Check all terminations in control panel.</p>		





# Maintenance Operations Procedure

<b>9.</b>	<b>Condenser Fan Section</b>			
	Inspect bearings for discoloration, excessive wear and end play. Apply grease, as needed.			
	Adjust pulleys and belts. If belt wear indicates a need for replacement, replace belt.  Belt replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Inspect fan blades, looking for cracks or deformation.			
	Lubricate fan and motor.			
<b>10.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>11.</b>	Communicate completion time to facility manager and CMMS administrator.			
<b>12.</b>	Communicate completion of tasks to affected occupants.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H1 Air Cooled DX (Split System) Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Heat Pumps	Packaged Heat Pumps	23-33 17 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H1-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the asset. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heating and cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO will be used after initial operating inspection is complete.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) <input type="checkbox"/> Noise hazard.
Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.			
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>			
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use arc flash PPE when taking voltage and amp measurements.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	PM tasks require use of a magnahelic, multimeter and thermocouple.
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of ladders and/or fall arrestor safety equipment may be required to access equipment.
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)
			Use nitrile gloves when cleaning condensate pan.
			Use hearing protection during operational equipment inspection.
	Housekeeping	Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>		
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space <input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of electrical shock when taking multimeter readings.</p> <p>Risk 2: There is a risk of chemical exposure when cleaning the condensate pan.</p> <p>Risk 3: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 4: Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 5: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>



# Maintenance Operations Procedure

Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use arc flash PPE when taking voltage and amperage readings.</p> <p>Contingency Plan 2: Use nitrile gloves to provide protection from chemical exposure while cleaning the condensate pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 3: Use hearing protection during operational inspections.</p> <p>Contingency Plan 4: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 5: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>
Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	<p>Notify Facility Manager when PM procedure:</p> <p>Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p> <p>Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p>
CMMS Administrator	<p>Notify CMMS Administrator when PM procedure:</p> <p>Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____</p>

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
<p>NOTES:</p> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>				
Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			



**The following tasks detail specific inspections to be conducted while unit is in operation. Exercise caution when accessing an energized unit.**

<b>5.</b>	<b>Operational Overview</b>			
	Note current outside air temperature and weather conditions.			
	Listen and feel for any abnormal vibration or noise. If noted, record on the work order.			
	Safely open the control access panel. Be very careful as this area is energized.			
	Verify all service lamps are working. Replace, as needed.			
	Inspect all gauges and meters to ensure they are functional. Check leak detection system and record readings in work order. If leaks are discovered, a separate work order will be opened to address.			
	Using a multimeter, check and record the voltage and amperage for each lead while unit is in operation.  Line side voltage: ____ Load side amperage: ____ Compressor stage amperage: #1 ____ #2 ____ Coil fan amperage: Fan 1 ____ Fan 2 ____			
	Using a magnahelic, measure and record the pressure delta ( $\Delta P$ ) across the filter bank.  $\Delta P$ : ____ Normal Operating range: ??? Filters Replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No Replace filters as needed, writing date of replacement on the filters.			
	Check and record the following parameters:  SA Temp: __ RA Temp: __			
	Inspect felt/rubber gaskets around access doors. Do doors fit tightly when closed? <input type="checkbox"/> Yes <input type="checkbox"/> No			
<b>6.</b>	<b>LO/TO</b>			
	Turn the unit off, shut off breaker [panel and breaker number], and follow proper lockout/tag out procedures to deenergize the unit.			





# Maintenance Operations Procedure

<b>7.</b>	<b>Coils</b>			
	Inspect coils for cleanliness. Note any oily spots as potential refrigerant leaks.			
	Inspect coil fittings and tighten if necessary.			
	Clean condenser coil with low pressure water (<150 psi).			
	Utilize fin comb to straighten coil fins, as needed.			
	Inspect and blow out condensate drain with compressed air.			
<b>8.</b>	<b>Controls</b>			
	Inspect wiring and all connectors, looking for discoloration or loose fittings connections. Tighten all electrical contacts.			
	Inspect and clean VFD.			
	Tighten all electrical contacts.			
	Check all terminations in control panel			
<b>9.</b>	<b>Condenser Fan Section</b>			
	Inspect bearings for excessive wear and end play. Apply grease, as needed.			
	Adjust pulleys and belts. If belt wear indicates a need for replacement, replace belt and create work order for follow-up adjustment of new belt.			
	Belt replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No W/O created: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Inspect fan blades, looking for cracks or deformation.			
	Lubricate fan and motor.			
<b>10.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>11.</b>	Communicate completion time to facility manager and CMMS administrator.			
<b>12.</b>	Communicate completion of tasks to affected occupants.			



<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Ap- proval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H2 Air Handling Unit (Air Cooled DX/Package) Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Air Handling Units	Customized Air Handling Units	23-33 25 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H2-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the Air Handling Unit. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	

Air Handling Unit (Air Cooled DX/Package) Quarterly PM Procedures



Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heating and cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO will be used after initial operating inspection is complete.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) <input type="checkbox"/> Noise hazard.
Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.			
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>			
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use arc flash PPE when taking voltage and amp measurements.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	PM tasks require use of a magnahelic, multimeter and thermocouple.
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of ladders and/or fall arrestor safety equipment may be required to access equipment.
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)
			Use nitrile gloves when cleaning condensate pan.
			Use hearing protection during operational equipment inspection.
	Housekeeping		Clean up area upon completion of PM procedure.
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>5.</b>	<b>Required Permits</b> (Check all that apply)		
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space <input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of electrical shock when taking multimeter readings.</p> <p>Risk 2: There is a risk of chemical exposure when cleaning the condensate pan.</p> <p>Risk 3: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 4: Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 5: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>



# Maintenance Operations Procedure

Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use arc flash PPE when taking voltage and amperage readings.</p> <p>Contingency Plan 2: Use nitrile gloves to provide protection from chemical exposure while cleaning the condensate pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 3: Use hearing protection during operational inspections.</p> <p>Contingency Plan 4: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 5: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>
Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	<p>Notify Facility Manager when PM procedure:</p> <p>Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p> <p>Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p>
CMMS Administrator	<p>Notify CMMS Administrator when PM procedure:</p> <p>Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____</p>

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
<p>NOTES:</p> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>				
Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			



<p><b>The following tasks detail specific inspections to be conducted while unit is in operation. Exercise caution when accessing an energized unit.</b></p>			
5.	<b>Operational Overview</b>		
	Note current outside air temperature and weather conditions. Temp: __ Weather:		
	Listen and feel for any abnormal vibration or noise. If noted, record on the work order.		
	Safely open the control access panel. Be very careful as this area is energized.		
	Check leak detection system and record readings in work order. If leaks are discovered, a separate work order will be opened to address.		
	Verify all service lamps are working. Replace, as needed.		
	Using a multimeter, check and record the voltage and amperage for each compressor stage while unit is in operation.		
	Using a magnahelic, measure and record the pressure delta ( $\Delta P$ ) across the filter bank.  $\Delta P$ : ____ Normal Operating range: ??? Filters Replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Replace filters as needed, writing date of replacement on the filters.		
	Check and record the following parameters:  SA Temp: __ RA Temp: __		
Inspect felt/rubber gaskets around access doors. Do doors fit tightly when closed? <input type="checkbox"/> Yes <input type="checkbox"/> No			
6.	<b>LO/TO</b>		
	Turn the unit off, shut off breaker [panel and breaker number], and follow proper lockout/tag out procedures to deenergize the unit.		
7.	<b>Coils</b>		
	Inspect coils for cleanliness. Note any oily spots as potential refrigerant leaks.		
	Inspect and blow out condensate drain with compressed air. Add water to pan via hose and make sure it drains properly. Clean and add biocide pad.		
8.	<b>Controls</b>		
	Inspect wiring and all connectors, looking for discoloration or loose fittings connections.		
	Inspect and clean VFD.		
	Check all terminations in control panel.		





# Maintenance Operations Procedure

<b>9.</b>	<b>Economizer Section</b>			
	Check for dirt accumulation, and clean as needed.			
	Check damper actuator and linkage operation and verify they operate freely over the full modulation range, without binding.			
	Check and adjust minimum position.			
	Check operation of pressure relief dampers.			
<b>10.</b>	<b>Return Fan Section</b>			
	Inspect bearings for discoloration, excessive wear and end play. Apply grease, as needed.			
	Adjust pulleys and belts. If belt wear indicates a need for replacement, replace belt and create work order for follow-up adjustment of new belt. Belt replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Inspect fan blades, looking for cracks or deformation.			
	Lubricate fan and motor.			
<b>11.</b>	<b>Supply Fan Section</b>			
	Inspect bearings for discoloration, excessive wear and end play. Apply grease, as needed.			
	Adjust pulleys and belts. If belt wear indicates a need for replacement, replace belt and create work order for follow-up adjustment of new belt. Belt replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Inspect fan blades, looking for cracks or deformation.			
	Lubricate fan and motor.			
<b>12.</b>	<b>Condenser Fan Section</b>			
	Inspect bearings for discoloration, excessive wear and end play. Apply grease, as needed.			
	Adjust pulleys and belts. If belt wear indicates a need for replacement, replace belt and create work order for follow-up adjustment of new belt. Belt replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Inspect fan blades, looking for cracks or deformation.			
	Lubricate fan and motor.			



<b>13.</b>	<b>Filter Section</b>			
	Inspect pre and final filters for abnormal accumulation of dirt and debris. Replace filters as needed or as scheduled, writing date of replacement on the filters.			
	Filters Replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Clean filter rack and vacuum filter section after removal of old filters and prior to installing new filters.			
	Inspect filter rack and ensure that air path does not bypass filters.			
	Note condition of outside air filters/screens.			
<b>14.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>15.</b>	Communicate completion time to facility manager and CMMS administrator.			
<b>16.</b>	Communicate completion of tasks to affected occupants.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H2 Air Handling Unit (Air Cooled DX/Package) Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Air Handling Units	Customized Air Handling Units	23-33 25 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H2-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the Air Handling Unit. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	

Air Handling Unit (Air Cooled DX/Package) Annual PM Procedures



Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heating and cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO will be used after initial operating inspection is complete.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) <input type="checkbox"/> Noise hazard.
Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.			
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>			
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use arc flash PPE when taking voltage and amp measurements.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	PM tasks require use of a magnahelic, multimeter and thermocouple.
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of ladders and/or fall arrestor safety equipment may be required to access equipment.
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)
			Use nitrile gloves when cleaning condensate pan.
			Use hearing protection during operational equipment inspection.
	Housekeeping		Clean up area upon completion of PM procedure.
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>		
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space <input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of electrical shock when taking multimeter readings.</p> <p>Risk 2: There is a risk of chemical exposure when cleaning the condensate pan.</p> <p>Risk 3: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 4: Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 5: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>



# Maintenance Operations Procedure

Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use arc flash PPE when taking voltage and amperage readings.</p> <p>Contingency Plan 2: Use nitrile gloves to provide protection from chemical exposure while cleaning the condensate pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 3: Use hearing protection during operational inspections.</p> <p>Contingency Plan 4: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 5: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>
Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	<p>Notify Facility Manager when PM procedure:</p> <p>Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p> <p>Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p>
CMMS Administrator	<p>Notify CMMS Administrator when PM procedure:</p> <p>Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____</p>

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
<p>NOTES:</p> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>				
Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			



<p><b>The following tasks detail specific inspections to be conducted while unit is in operation. Exercise caution when accessing an energized unit.</b></p>			
5.	<p><b>Operational Overview</b></p>		
	<p>Note current outside air temperature and weather conditions.</p> <p>Temp: __ Weather:</p>		
	<p>Listen and feel for any abnormal vibration or noise. If noted, record on the work order.</p>		
	<p>Safely open the control access panel. Be very careful as this area is energized.</p>		
	<p>Verify all service lamps are working. Replace, as needed.</p>		
	<p>Inspect all gauges and meters to ensure they are functional. Check leak detection system and record readings in work order. If leaks are discovered, a separate work order will be opened to address.</p>		
	<p>Using a multimeter, check and record the voltage and amperage for each lead while unit is in operation.</p> <p>Line side voltage: ____</p> <p>Load side amperage: ____</p> <p>Compressor stage amperage: #1 ____ #2 ____</p> <p>Coil fan amperage: Fan 1 ____ Fan 2 ____</p>		
	<p>Using a magnahelic, measure and record the pressure delta (<math>\Delta P</math>) across the filter bank.</p> <p><math>\Delta P</math>: ____ Normal Operating range: ??? Filters Replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Replace filters as needed, writing date of replacement on the filters.</p>		
	<p>Check and record the following parameters:</p> <p>SA Temp: __ RA Temp: __</p>		
	<p>Inspect felt/rubber gaskets around access doors. Do doors fit tightly when closed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>		
6.	<p><b>LO/TO</b></p>		
	<p>Turn the unit off, shut off breaker [panel and breaker number], and follow proper lockout/tag out procedures to deenergize the unit.</p>		





# Maintenance Operations Procedure

<b>7.</b>	<b>Coils</b>			
	Inspect coils for cleanliness. Note any oily spots as potential refrigerant leaks.			
	Inspect coil fittings and tighten if necessary.			
	Clean condenser coil with low pressure water (<150 psi).			
	Utilize fin comb to straighten coil fins, as needed.			
	Inspect and blow out condensate drain with compressed air. Add water to pan via hose and make sure it drains properly. Clean and add biocide pad.			
<b>8.</b>	<b>Controls</b>			
	Inspect wiring and all connectors, looking for discoloration or loose fittings connections. Tighten all electrical contacts.			
	Inspect and clean VFD.			
	Tighten all electrical contacts.			
	Check all terminations in control panel			
<b>9.</b>	<b>Economizer Section</b>			
	Check for dirt accumulation, and clean as needed.			
	Check damper actuator and linkage operation and verify they operate freely over the full modulation range, without binding.			
	Check damper linkage, set screws and blade adjustment for proper tightness.			
	Check and adjust minimum position.			
	Check operation of pressure relief dampers.			
<b>10.</b>	<b>Return Fan Section</b>			
	Inspect entire motor and fan assembly. Clean with a damp cloth.			
	<ul style="list-style-type: none"> <li>• Inspect bearings for excessive wear and end play. Apply grease, as needed.</li> <li>• Inspect fan blades, looking for cracks or deformation.</li> <li>• Inspect bearing collar set screws on fan shaft and ensure tightness.</li> </ul>			
	Adjust pulleys and belts. If belt wear indicates a need for replacement, replace belt and create work order for follow-up adjustment of new belt.			
	Belt replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No W/O created: <input type="checkbox"/> Yes <input type="checkbox"/> No			
Lubricate fan and motor.				



<b>11.</b>	<b>Supply Fan Section</b>			
	Inspect bearings for excessive wear and end play. Apply grease, as needed.			
	Adjust pulleys and belts. If belt wear indicates a need for replacement, replace belt and create work order for follow-up adjustment of new belt. Belt replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No W/O created: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Inspect fan blades, looking for cracks or deformation.			
	Lubricate fan and motor.			
<b>12.</b>	<b>Condenser Fan Section</b>			
	Inspect bearings for excessive wear and end play. Apply grease, as needed.			
	Adjust pulleys and belts. If belt wear indicates a need for replacement, replace belt and create work order for follow-up adjustment of new belt. Belt replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No W/O created: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Inspect fan blades, looking for cracks or deformation.			
	Lubricate fan and motor.			
<b>13.</b>	<b>Filter Section</b>			
	Inspect pre and final filters for abnormal accumulation of dirt and debris. Replace filters as needed or as scheduled, writing date of replacement on the filters. Filters Replaced: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Clean filter rack and vacuum filter section after removal of old filters and prior to installing new filters.			
	Inspect filter rack and ensure that air path does not bypass filters.			
	Note condition of outside air filters/screens.			
<b>14.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>15.</b>	Communicate completion time to facility manager and CMMS administrator.			
<b>16.</b>	Communicate completion of tasks to affected occupants.			



# Maintenance Operations Procedure

<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H3 Air-Cooled Chiller Monthly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Chillers	Chillers (Air Cooled)	23-33 21 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H3-M
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the Air-Cooled Chiller. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no disruption to the facility during this monthly PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) <input type="checkbox"/> Noise hazard.
Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.			
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around uncovered electrical leads. Use appropriate PPE.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of ladders and/or fall arrestor safety equipment may be required to access equipment.	
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
			Use hearing protection during this procedure.	
	Housekeeping	Clean up area upon completion of PM procedure.		
Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of chemical exposure when cleaning the condensate pan.</p> <p>Risk 2: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 3: Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 4: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>
Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning the condensate pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 2: Use hearing protection during operational inspections.</p> <p>Contingency Plan 3: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 4: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>





# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>			
Facility Management	Notify Facility Manager when PM procedure:			
	Begins	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
	Is completed	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
CMMS Administrator	Notify CMMS Administrator when PM procedure:			
	Is completed	via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone	Time/Date: _____	

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
--	---	--	--	--

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Check and record the pressure for evaporator, condensor and intermediate oil.			
5.	<p>Observe liquid line sight glass on EXV. If liquid line sight glass has bubbles, measure the subcooling entering the EXV. Subcooling should always be greater than 10°F.</p> <p><i>Important: A clear sight glass alone does not mean that the system is properly charged. Also check the rest of the system operating conditions.</i></p>			
6.	Inspect the entire system for unusual operation.			
7.	Record runtime and start counts since last monthly PM procedure.			
8.	Check and record oil temperature.			



<b>9.</b>	Check and record oil pressure.			
<b>10.</b>	Visually check for oil leaks and check crankcase oil level.			
<b>11.</b>	Inspect unit for refrigerant leaks. If inspection discovers leaks or refrigerant losses, record the problem and refrigerant loss on the JCC's refrigerant management form(s), upload the refrigerant management form(s) to the Computer Aided Facility Management (CAFM) program, and create a work order for repair.			
<b>12.</b>	Inspect the condenser coils for dirt and debris. If the coils are dirty, create a W/O to clean the coils.			
<b>13.</b>	Ensure exterior of panel enclosures (including remote VFD, if installed) are clear of any dust or debris. Clean, as necessary.			
<b>14.</b>	Observe chilled water pump, motor and coupling in operation. Record observations and document any abnormalities in operation, unusual vibration or noise.  Lubricate pump bearing housings in accordance with manufacturer recommendations. Check pump seals and ensure there are no leaks. If detected, create a work order to replace the bearings and seals.			
<b>15.</b>	Clean exterior of pump with a damp cloth. A mild cleaning agent may be used, if necessary.			
<b>16.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit			
<b>17.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>H3 Air-Cooled Chiller Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2018	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:	
			HVAC	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:	
HVAC Specific Products and Equipment	Chillers	Chillers (Air Cooled)	23-33 21 13	
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:	
			H3-A	
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.				
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:	

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:		
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.		
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the Air-Cooled Chiller. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.		
Responsibilities:			
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.		



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling capacity will be reduced while the chiller is offline.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO will be used to shut the unit down during this procedure
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) <input type="checkbox"/> Noise hazard.
Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.			
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>			
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around uncovered electrical leads. Use appropriate PPE.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of ladders and/or fall arrestor safety equipment may be required to access equipment.	
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
			Use hearing protection during this procedure.	
	Housekeeping	Clean up area upon completion of PM procedure.		
Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of chemical exposure when cleaning the condensate pan.</p> <p>Risk 2: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 3: Accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 4: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>
Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning the condensate pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 2: Use hearing protection during operational inspections.</p> <p>Contingency Plan 3: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 4: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>



# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>			
Facility Management	Notify Facility Manager when PM procedure:			
	Begins	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
	Is completed	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
CMMS Administrator	Notify CMMS Administrator when PM procedure:			
	Is completed	via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone	Time/Date: _____	

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Check and record the pressure for evaporator, condensor and intermediate oil.			
5.	<p>Observe liquid line sight glass on EXV. If liquid line sight glass has bubbles, measure the subcooling entering the EXV. Subcooling should always be greater than 10°F.</p> <p><i>Important: A clear sight glass alone does not mean that the system is properly charged. Also check the rest of the system operating conditions.</i></p>			
6.	Inspect the entire system for unusual operation.			
7.	Record runtime and start counts since last Monthly PM Procedure.			
8.	Check and record oil temperature.			



<b>9.</b>	Check and record oil pressure.			
<b>10.</b>	Check and record evaporator pressure.			
<b>11.</b>	Check and record evaporator water temperatures.			
<b>12.</b>	Check and record condenser pressure.			
<b>13.</b>	Check and record condenser water temperatures.			
<b>14.</b>	Check and record chilled water temperature.			
<b>15.</b>	Check and record superheat/subcooling.			
<b>16.</b>	Shut down the chiller and perform a check of the oil level following manufacturer instructions.			
<b>17.</b>	Extract a sample amount of compressor oil for laboratory analysis.			
<b>18.</b>	<p>LO/TO the chiller and perform the following checks:</p> <ul style="list-style-type: none"> <li>• Inspect unit for refrigerant leaks. If inspection discovers leaks or refrigerant losses, record the problem and refrigerant loss on the JCC's refrigerant management form(s), upload the refrigerant management form(s) to the Computer Aided Facility Management (CAFM) program, and create a work order for repair.</li> <li>• Collect refrigerant sample and send refrigerant sample to laboratory for analysis. Upload the laboratory analysis results to the SWO.</li> <li>• Check and tighten all electrical connections.</li> </ul>			
<b>19.</b>	Clean the air filters in the bottom inlet hoods that extend from the back of the electrical panel.			
<b>20.</b>	Inspect the condenser coils for dirt and debris. If the coils are dirty, clean following manufacturer instructions.			
<b>21.</b>	Ensure exterior of panel enclosures (including remote VFD, if installed) are clear of any dust or debris. Clean, as necessary. Repaint areas that show signs of corrosion.			
<b>22.</b>	Remove LO/TO and return unit to service.			
<b>23.</b>	<p>Observe chilled water pump, motor and coupling in operation. Record observations and document any abnormalities in operation, unusual vibration or noise.</p> <p>Lubricate pump bearing housings in accordance with manufacturer recommendations. Check pump seals and ensure there are no leaks. If detected, create a work order to replace the bearings and seals.</p>			





# Maintenance Operations Procedure

<b>24.</b>	Using an accurate measuring device, check the temperature of the bearing frame. Verify temperature does not exceed manufacturer limits as defined in the O&M manual. If it does, create a work order to determine the cause.			
<b>25.</b>	Clean exterior of pump with a damp cloth. A mild cleaning agent may be used, if necessary.			
<b>26.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the chiller unit			
<b>27.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:	
Craft Manager Approval	NAME:	TITLE:	DATE:	
Safety Coordinator Approval	NAME:	TITLE:	DATE:	



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H4 Centrifugal Chiller Monthly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Chillers	Chillers	23-33 21 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H4-M
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the Chiller. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impact to the facility during the monthly PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around uncovered electrical leads. Use appropriate PPE.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
			Use hearing protection during this procedure.	
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of chemical exposure when cleaning the chiller.</p> <p>Risk 2: There is a risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 3: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>
Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 2: Use hearing protection during operational inspections.</p> <p>Contingency Plan 3: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>



# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	<p>Notify Facility Manager when PM procedure:</p> <p>Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p> <p>Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p>
CMMS Administrator	<p>Notify CMMS Administrator when PM procedure:</p> <p>Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____</p>

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Check three-phase voltage and current balance.			
5.	Check programmable operating setpoints and safety cut-outs. Make sure they are correct for the application.			
6.	Verify condenser and evaporator water flows.			
7.	Record runtime and start counts since last PM procedure.			
8.	Check and record oil temperature.			
9.	Check and record oil pressure.			
10.	Visually inspect the unit for oil leaks.			
11.	Inspect unit for refrigerant leaks.			



<b>12.</b>	Clean unit using appropriate methods (vacuum, wipe-down, etc.).			
<b>13.</b>	Observe chilled water pump, motor and coupling in operation. Record observations and document any abnormalities in operation, unusual vibration or noise.  Lubricate pump bearing housings in accordance with manufacturer recommendations. Check pump seals and ensure there are no leaks. If detected, create a work order to replace the bearings and seals.			
<b>14.</b>	Clean exterior of pump with a damp cloth. A mild cleaning agent may be used, if necessary.			
<b>15.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit			
<b>16.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H4 Centrifugal Chiller Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Chillers	Chillers	23-33 21 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H4-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the chiller. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling capability will be reduced while chiller is offline.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO procedures are applied during this PM procedure.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around electrical leads. Use appropriate PPE.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning. Use hearing protection during this procedure.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Cooling of the building will be impacted while chiller is offline. Risk 2: There is a risk of chemical exposure when cleaning the chiller. Risk 3: There is a risk of excessive noise exposure during operational equipment inspection. Risk 4: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i> Contingency Plan 1: Procedure should be conducted when cooling demand is low (e.g., during morning hours, as seasonal conditions permit). Contingency Plan 2: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents. Contingency Plan 3: Use hearing protection during operational inspections. Contingency Plan 4: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.



# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>		
Facility Management	Notify Facility Manager when PM procedure:		
	Begins	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____
	Is completed	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure:		
	Is completed	via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone	Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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**NOTES:**

- Verify that Change Management approval has been received prior to performing work.
- Log Time for major steps.
- Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Check and record three-phase voltage and current balance.			
5.	Check programmable operating setpoints and safety cut-outs. Make sure they are correct for the application.			
6.	Verify condenser and evaporator water flows and check operation of chilled water isolation valves.			
7.	Record runtime and start counts since last PM procedure.			
8.	Check and record oil temperature.			
9.	Check and record oil pressure.			
10.	Check and record evaporator pressure.			
11.	Check and record evaporator water temperatures.			
12.	Check and record condenser pressure.			



<b>13.</b>	Check and record condenser water temperatures.			
<b>14.</b>	Check and record chilled water temperature.			
<b>15.</b>	Check and record superheat/subcooling.			
<b>16.</b>	Inspect unit for refrigerant leaks.			
<b>17.</b>	<b>LO/TO</b> Shut unit down and perform lockout/tag out procedures.			
<b>18.</b>	Check and tighten all electrical connections using appropriate arc flash PPE.			
<b>19.</b>	Clean or backflush VSD heat exchanger.			
<b>20.</b>	Replace VSD starter coolant per manufacturer's recommendation.			
<b>21.</b>	Measure motor winding and insulation resistance.			
<b>22.</b>	Collect refrigerant sample and send refrigerant sample to laboratory for analysis. Upload the laboratory analysis results to the SWO.			
<b>23.</b>	Review operating data for trends which indicate increasing vibration or power consumption. The MBC data includes rotational speed vibration in displacement.			
<b>24.</b>	Clean tubes.			
<b>25.</b>	Remove LO/TO devices and restore unit to operation.			
<b>26.</b>	Observe chilled water pump, motor and coupling in operation. Record observations and document any abnormalities in operation, unusual vibration or noise.  Lubricate pump bearing housings in accordance with manufacturer recommendations. Check pump seals and ensure there are no leaks. If detected, create a work order to replace the bearings and seals.			
<b>27.</b>	Using an accurate measuring device, check the temperature of the bearing frame. Verify temperature does not exceed manufacturer limits as defined in the O&M manual. If it does, create a work order to determine the cause.			
<b>28.</b>	Clean exterior of pump with a damp cloth. A mild cleaning agent may be used, if necessary.			
<b>29.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit			
<b>30.</b>	Communicate completion time to facility manager and CMMS administrator.			



# Maintenance Operations Procedure

<b>Section 11:</b> <b>Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Ap- proval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H5 Cooling Tower (Induced Draft) Monthly PM Procedure</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Cooling Towers	Mechanical Draft Cooling Towers	23-33 23 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H5-M
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the cooling tower. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				
There should be no impact to the facility during the monthly PM procedure.				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input checked="" type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for chemical agents used in cooling tower water.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Hand & Power Tools	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Fall protection is to be used when accessing cooling tower components that present a fall hazard.		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
		Use nitrile gloves when exposure to cooling tower water is necessary.		
		Use hearing protection during this procedure.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There are potential hazards associated with this PM procedure including chemical exposure and fall hazards.</p> <p>Risk 2: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 3: If the cooling tower is located on a roof, accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 4: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>



# Maintenance Operations Procedure

Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Service technicians must observe all safety precautions described within this procedure and as required by OSHA/CalOSHA.</p> <p>Contingency Plan 2: Use hearing protection during operational inspections.</p> <p>Contingency Plan 3: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 4: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>
Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
NOTES: <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>				
Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			



4.	Inspect general condition of the unit and check for leaks, unusual noise or vibration. Focus the inspection on: <ul style="list-style-type: none"> <li>• damage to corrosion protection,</li> <li>• signs of scale formation or corrosion,</li> <li>• accumulation of dirt and debris, and</li> <li>• presence of biofilms.</li> </ul> If any of the above issues are discovered, generate a separate W/O to address the issue as quickly as possible.			
5.	Review water treatment tests for corrosion and Bio control.			
6.	Inspect air intake louvers/combined inlet shields.			
7.	Check and adjust water level in cold water basin.			
8.	Check operation of make-up valve.			
9.	Test and verify operation of sump blow-down valve.			
10.	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
11.	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>H5 Cooling Tower (Induced Draft) Quarterly PM Procedure</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2018	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Quarterly	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:	
			HVAC	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:	
HVAC Specific Products and Equipment	Cooling Towers	Mechanical Draft Cooling Towers	23-33 23 11	
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:	
			H5-Q	
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.				
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:	

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:		
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.		
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the cooling tower. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.		
Responsibilities:			
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.		



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling capability will be reduced while cooling tower is offline.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling tower fans and pumps require LOTO procedures.
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Document- ation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input checked="" type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around electrical leads. Use appropriate PPE.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Fall protection is to be used when accessing cooling tower components that present a fall hazard.		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
		Use nitrile gloves when cleaning.		
		Use hearing protection during this procedure.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There are potential hazards associated with this PM procedure including chemical exposure and fall hazards.</p> <p>Risk 2: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 3: If the cooling tower is located on a roof, accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 4: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>



# Maintenance Operations Procedure

Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Service technicians must observe all safety precautions described within this procedure and as required by OSHA/CalOSHA.</p> <p>Contingency Plan 2: Use hearing protection during operational inspections.</p> <p>Contingency Plan 3: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 4: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>
Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>		
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____		
BMS Operator	Notify BMS Operator when requesting cooling tower: Shutdown via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Start-up via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____		
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____		

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
<b>NOTES:</b> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>				
Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			



<b>4.</b>	<p>Inspect general condition of the unit and check for leaks, unusual noise or vibration. Focus the inspection on:</p> <ul style="list-style-type: none"> <li>• damage to corrosion protection,</li> <li>• signs of scale formation or corrosion,</li> <li>• accumulation of dirt and debris, and</li> <li>• presence of biofilms.</li> </ul> <p>If any of the above issues are discovered, generate a separate W/O to address the issue as quickly as possible.</p>			
<b>5.</b>	Inspect air intake louvers/combined inlet shields.			
<b>6.</b>	Review water treatment tests for corrosion and Bio control.			
<b>7.</b>	<p>Inform the BMS operator that the procedure is about to begin. Verify with the BMS operator that the cooling tower is being shut down.</p> <ul style="list-style-type: none"> <li>• Set cooling tower fans to off from the BMS.</li> <li>• Set the condenser water pump to off from the BMS.</li> </ul>			
<b>8.</b>	Verify the cooling tower is offline. Open the disconnects, and LOTO the fans and pumps.			
<b>9.</b>	Perform checks on fan belts. Adjust fan belts if necessary.			
<b>10.</b>	Check fan belt sheave alignment.			
<b>11.</b>	Check and tighten sheave screws if necessary.			
<b>12.</b>	Inspect fan blades, looking for cracks or deformation.			
<b>13.</b>	Inspect cooling tower fill and spray valve nozzles.			
<b>14.</b>	Check cold water basin, clean suction screen, adjust float valves if necessary, and make up water controls.			
<b>15.</b>	Inspect basin filtration system for proper operation, as applicable.			
<b>16.</b>	Remove lock out/tag out from local disconnects.			
<b>17.</b>	Set local fan disconnect to ON position.			
<b>18.</b>	Contact BMS operator and have them start cooling tower fans.			
<b>19.</b>	Log fan motor readings using calibrated volt/amp meter.			
<b>20.</b>	Test and verify operation of sump blow-down valve.			
<b>21.</b>	Check operation of make-up valve.			
<b>22.</b>	Have BMS operator set cooling tower back to normal operations.			
<b>23.</b>	Verify operation of cooling tower.			
<b>24.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			



# Maintenance Operations Procedure

<b>25.</b>	Communicate completion time to facility manager and CMMS administrator.			
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<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H5 Cooling Tower (Induced Draft) Annual PM Procedure</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Cooling Towers	Mechanical Draft Cooling Towers	23-33 23 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H5-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the cooling tower. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling capability will be reduced while cooling tower is offline.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling tower fans and pumps require LOTO procedures.
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Document- ation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input checked="" type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around electrical leads. Use appropriate PPE.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.	
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fall protection is to be used when accessing cooling tower components that present a fall hazard.	
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
			Use hearing protection during this procedure.	
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There are potential hazards associated with this PM procedure including chemical exposure and fall hazards.</p> <p>Risk 2: Risk of excessive noise exposure during operational equipment inspection.</p> <p>Risk 3: If the cooling tower is located on a roof, accessing the roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 4: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>





<p><b>4.</b></p>	<p>Inspect general condition of the unit and check for leaks, unusual noise or vibration. Focus the inspection on:</p> <ul style="list-style-type: none"> <li>• damage to corrosion protection,</li> <li>• signs of scale formation or corrosion,</li> <li>• accumulation of dirt and debris, and</li> <li>• presence of biofilms.</li> </ul> <p>If any of the above issues are discovered, generate a separate W/O to address the issue as quickly as possible.</p>			
<p><b>5.</b></p>	<p>Inspect air intake louvers/combined inlet shields.</p>			
<p><b>6.</b></p>	<p>Review water treatment tests for corrosion and Bio control.</p>			
<p><b>7.</b></p>	<p>Inform the BMS operator that the procedure is about to begin. Verify with the BMS operator that the cooling tower is being shut down.</p> <ul style="list-style-type: none"> <li>• Set cooling tower fans to off from the BMS.</li> <li>• Set the condenser water pump to off from the BMS.</li> </ul>			
<p><b>8.</b></p>	<p>Verify the cooling tower is offline. Open the disconnects, and LOTO the fans and pumps.</p>			
<p><b>9.</b></p>	<p>Access the cooling tower motors and belts to check and adjust.</p>			
<p><b>10.</b></p>	<p>Check bearings and lubricate as per manufacturer’s recommendations.</p>			
<p><b>11.</b></p>	<p>Check sheaves alignment, note any problems.</p>			
<p><b>12.</b></p>	<p>Check and tighten sheave set screws.</p>			
<p><b>13.</b></p>	<p>Inspect fan blades, looking for cracks or deformation.</p>			
<p><b>14.</b></p>	<p>Inspect fill and nozzles and note any problems.</p>			
<p><b>15.</b></p>	<p>Inspect basin filtration system for proper operation, as applicable.</p>			
<p><b>16.</b></p>	<p>Valve off condenser water supply and return. Shut off make-up water.</p>			
<p><b>17.</b></p>	<p>Drain cooling tower.</p>			
<p><b>18.</b></p>	<p>Wash down entire cooling tower and the cooling tower basin.</p>			
<p><b>19.</b></p>	<p>Re-fill cooling tower basin and open condenser supply and return valves.</p>			
<p><b>20.</b></p>	<p>Meg motors.</p>			
<p><b>21.</b></p>	<p>Check vibration switch.</p>			
<p><b>22.</b></p>	<p>Verify cooling tower basin levels.</p>			
<p><b>23.</b></p>	<p>Remove LOTO. Verify power is restored.</p>			
<p><b>24.</b></p>	<p>Contact BMS operator and request the cooling tower to be put back into operation.</p>			



# Maintenance Operations Procedure

<b>25.</b>	Verify operation of cooling tower.			
<b>26.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>27.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H6 Ice Chiller Tank Monthly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC	Chillers		
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H6-M
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the ice chiller tank. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impact to the facility cooling systems during this PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Document- ation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Hand & Power Tools	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning. Use hearing protection during this procedure.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the unit. Risk 2: Risk of excessive noise exposure during operational equipment inspection. Risk 3: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i> Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents. Contingency Plan 2: Use hearing protection during operational inspections. Contingency Plan 3: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management. Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Verify ice thickness reflects system settings, as displayed on control panel.			
5.	Inspect the unit with a focus on: <ul style="list-style-type: none"> <li>• damage of corrosion protection</li> <li>• signs of scale formation or corrosion</li> <li>• accumulation of dirt and debris</li> <li>• presence of biofilms</li> </ul> If any of the above issues are discovered, a separate W/O must be generated to address the issue as quickly as possible.			
6.	Inspect the ice quantity controller sensor for signs of damage.			
7.	Clean the air pump filter and ensure there are no kinks or obstructions in piping.			
8.	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
9.	Communicate completion time to facility manager and CMMS administrator.			



<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Ap- proval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H6 Ice Chiller Tank Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Chillers		
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H6-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the ice chiller tank. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling capacity will be reduced while the unit is offline.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO will be used to shut the unit down during this procedure
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) <input type="checkbox"/> Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around electrical leads. Use appropriate PPE.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning. Use hearing protection during this procedure. Insulated gloves for high/low temperature protection.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the unit. Risk 2: Risk of excessive noise exposure during operational equipment inspection. Risk 3: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i> Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents. Contingency Plan 2: Use hearing protection during operational inspections. Contingency Plan 3: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.





# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>			
Facility Management	Notify Facility Manager when PM procedure:			
	Begins	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
	Is completed	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
CMMS Administrator	Notify CMMS Administrator when PM procedure:			
	Is completed	via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone	Time/Date: _____	

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Verify ice thickness reflects system settings, as displayed on control panel.			
5.	Inspect the unit with a focus on: <ul style="list-style-type: none"> <li>• damage of corrosion protection</li> <li>• signs of scale formation or corrosion</li> <li>• accumulation of dirt and debris</li> <li>• presence of biofilms</li> </ul> If any of the above issues are discovered, create a repair W/O to address the issue as quickly as possible.			
6.	Shut unit down and apply appropriate LO/TO procedures.			
7.	Check the water level of the tank to ensure it remains above the manufacturer-specified level. To properly check the water level in the tank, the ice must be completely melted.			



<b>8.</b>	Inspect ice chiller tank water for contamination from dust or debris. If necessary, the tank should be drained and cleaned using fresh water to flush the tank and coils.			
<b>9.</b>	Inspect the ice quantity controller sensor for signs of damage.			
<b>10.</b>	Check the concentration of glycol using a refractometer. Adjust as necessary to maintain recommended concentration.			
<b>11.</b>	Purge refrigerant oil from coils using purge connections provided.			
<b>12.</b>	Clean the air pump filter and ensure there are no kinks or obstructions in piping.			
<b>13.</b>	Remove LO/TO and return unit to service.			
<b>14.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>15.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>H6 Ice Chiller Tank Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2018	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:
Street Address:		City:	State: Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:
			HVAC
System:	Subsystem:	Equipment Category:	Equipment Code:
HVAC Specific Products and Equipment	Chillers		
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			H6-A
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the ice chiller tank. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
Responsibilities:	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling capacity will be reduced while the chiller is offline.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO will be used to shut the unit down during this procedure
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around electrical leads. Use appropriate PPE.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning. Use hearing protection during this procedure. Insulated gloves for high/low temperature protection.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the unit. Risk 2: Risk of excessive noise exposure during operational equipment inspection. Risk 3: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i> Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents. Contingency Plan 2: Use hearing protection during operational inspections. Contingency Plan 3: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.



# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>			
Facility Management	Notify Facility Manager when PM procedure:			
	Begins	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
	Is completed	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
CMMS Administrator	Notify CMMS Administrator when PM procedure:			
	Is completed	via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone	Time/Date: _____	

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Inspect the unit with a focus on: <ul style="list-style-type: none"> <li>• damage of corrosion protection</li> <li>• signs of scale formation or corrosion</li> <li>• accumulation of dirt and debris</li> <li>• presence of biofilms</li> </ul> If any of the above issues are discovered, a separate W/O must be generated to address the issue as quickly as possible.			
5.	Shut unit down and apply appropriate LO/TO procedures. Drain ice chiller tank water and flush/wash with clean fresh water.			
6.	Inspect the coil for obstructions, damage, corrosion or fouling. Remove any obstructions and clean any fouling as specified by manufacturer. Create a repair W/O if damage is discovered.			
7.	Inspect the ice quantity controller sensor for signs of damage.			



<b>8.</b>	Clean the air pump and ensure there are no kinks or obstructions in piping. Change the air filter.			
<b>9.</b>	Check the concentration of glycol using a refractometer. Adjust as necessary to maintain recommended concentration.			
<b>10.</b>	Purge refrigerant oil from coils using purge connections provided.			
<b>11.</b>	Refill tank with fresh water. Add appropriate biocide and corrosion prevention treatments based on water quality, as recommended by manufacturer.			
<b>12.</b>	Check the conductivity of the tank water and ensure it remains below manufacturer-specified limit.			
<b>13.</b>	Remove LO/TO and return unit to service. Ensure air pump is operating during ice build.			
<b>14.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>15.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>H7 Geothermal System Monthly PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2018	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Monthly	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:
			HVAC
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			H7-M
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the geothermal system. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
Responsibilities:	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heating and cooling will be reduced while the system is off line.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around uncovered electrical leads. Use appropriate PPE.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure during cleaning activities.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	<b>Operational Overview</b>			
	Note current outside air temp and weather conditions			
	Verify overall operation			
	Note any abnormal vibration or noise			
	Document performance & deficiencies			
4.	<b>Well System</b>			
	Review water treatment tests for corrosion and Bio control.			
	Conduct a leak test as recommended by manufacturer.			
	Verify make-up water system is functioning as designed.			
5.	<b>Pumps</b>			
	Conduct a visual inspection of pumps for leaks. Note any abnormal condition.			
	Verify operational status.			



<b>6.</b>	<b>Safeties</b>			
	Check pressure switches for leaks			
	Check pressure relief valves			
<b>7.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H7 Geothermal System Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>	
<i>Street Address:</i>		<i>City:</i>	<i>State:</i>	<i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>	
			HVAC	
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>	
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>	
			H7-A	
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>				
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>	

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the geothermal system. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heating and cooling will be reduced while the system is off line.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around uncovered electrical leads. Use appropriate PPE.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping		Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure during cleaning activities.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	<b>Operational Overview</b>			
	Note current outside air temp and weather conditions			
	Verify overall operation			
	Note any abnormal vibration or noise			
	Document performance & deficiencies			
4.	<b>Chiller</b>			
	Isolate chiller (both condenser and chilled water circuits).			
	Drain chiller.			
	Back flush chiller with water to remove foreign material.			
	Fill chiller with clean water.			
	Test water for chloride content			



<b>5.</b>	<b>Well System</b>			
	Review water treatment tests for corrosion and Bio control.			
	Conduct a leak test as recommended by manufacturer.			
	Verify make-up water system is functioning as designed.			
<b>6.</b>	<b>Pumps</b>			
	Conduct a visual inspection of pumps for leaks. Note any abnormal condition.			
	Clean strainer.			
	Verify operational status.			
<b>7.</b>	<b>Controls</b>			
	Check all terminations in control panel			
<b>8.</b>	<b>Safeties</b>			
	Check pressure switches for leaks			
	Check pressure relief valves			
	Check for loose or burnt wiring			
<b>9.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H8 Water Source Heat Pump Monthly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC	Heat Pumps	Water Source Packaged Heat Pumps	23-33 17 11 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H8-M
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the water source heat pump. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>					
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> Define specific impact to affected equipment or systems; lockout/tag out requirements.	
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impact to the facility during this PM procedure.	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<i>Provide any additional relevant detail not covered above:</i>					



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping		Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There are electrical risks when working around exposed electrical connections.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of electrical or water systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use appropriate arc flash PPE when working around electrical connections.  Contingency Plan 2: Replacement units are usually available for installation within 24-48 hours. Space will only have building HVAC systems in the interim.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.





# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when quarterly and annual PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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NOTES: "(Q)" and "(A)" indicate tasks that are to be completed during Quarterly and Annual PM procedures.

- Verify that Change Management approval has been received prior to performing work.
- Log Time for major steps.
- Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Check for safe equipment access.			
3.	Communicate start time to facility manager.			
4.	Open cover and inspect air filter. Change if condition or schedule warrants. Air filters are changed on a quarterly basis or as needed. Write date on new filter when installing replacement.			
5.	Close unit and clean up work area.			
6.	Communicate completion time to facility manager and CMMS administrator.			
7.	Communicate completion of tasks to affected occupants.			

<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>
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Dry Run Performed (Physical Walkthrough)	DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:
Craft Manager Approval	NAME:	TITLE:

# Water Source Heat Pump Monthly PM Procedures



Safety Coordinator Approval	NAME:	TITLE:	DATE:
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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H8 Water Source Heat Pump Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Room No.:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC	Heat Pumps	Water Source Packaged Heat Pumps	23-33 17 11 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H8-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the water source heat pump. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impact to the facility during this PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around uncovered electrical leads. Use appropriate PPE.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes. Use of a multimeter is necessary.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There are electrical risks when working around exposed electrical connections.</p> <p>Risk 2: There is a risk of chemical exposure when cleaning the condensate pan.</p> <p>Risk 3: Failure or removal from service of the unit due to malfunction or degradation of electrical or water systems.</p>
Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use appropriate arc flash PPE when working around electrical connections.</p> <p>Contingency Plan 2: The use of nitrile gloves will provide sufficient protection from chemical exposure during equipment cleaning.</p> <p>Contingency Plan 3: Replacement units are usually available for installation within 24-48 hours. Space will only have building HVAC systems in the interim.</p>



# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	<p>Notify Facility Manager when quarterly and annual PM procedure:</p> <p>Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p> <p>Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p>
CMMS Administrator	<p>Notify CMMS Administrator when PM procedure:</p> <p>Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____</p>

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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NOTES: "(Q)" and "(A)" indicate tasks that are to be completed during Quarterly and Annual PM procedures.

- Verify that Change Management approval has been received prior to performing work.
- Log Time for major steps.
- Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Check for safe equipment access.			
3.	Communicate start time to facility manager.			
4.	Open cover and inspect air filter. Change if condition or schedule warrants. Air filters are changed on a quarterly basis or as needed. Write date on new filter when installing replacement.			
5.	<p>Using a multimeter, check and record the voltage and amperage for each lead while unit is in operation.</p> <p>Lead 1: Volts _____ Amps _____</p> <p>Lead 2: Volts _____ Amps _____</p> <p>Lead 3: Volts _____ Amps _____</p>			



<p><b>6.</b></p>	<p>Note whether unit is in heating or cooling mode. Using a thermocouple, check and record water temperature prior to entry and upon exit of coil. Record <math>\Delta T</math>.</p> <p>Mode: Heating <input type="checkbox"/> Cooling <input type="checkbox"/> (check one)</p> <p>Temp Entering Coil: ____</p> <p>Temp Exiting Coil: ____</p> <p>Temp Difference: ____</p>			
<p><b>7.</b></p>	<p>Close unit and clean up work area.</p>			
<p><b>8.</b></p>	<p>Communicate completion time to facility manager and CMMS administrator.</p>			
<p><b>9.</b></p>	<p>Communicate completion of tasks to affected occupants.</p>			

<p><b>Section 11:</b> <b>Procedure Approval</b></p>	<p><i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i></p>		
<p>Dry Run Performed (Physical Walkthrough)</p>	<p>DATE:</p>	<p>TIME:</p>	
<p>Facility Manager Approval</p>	<p>NAME:</p>	<p>TITLE:</p>	<p>DATE:</p>
<p>Craft Manager Approval</p>	<p>NAME:</p>	<p>TITLE:</p>	<p>DATE:</p>
<p>Safety Coordinator Approval</p>	<p>NAME:</p>	<p>TITLE:</p>	<p>DATE:</p>





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H8 Water Source Heat Pump Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>	
<i>Street Address:</i>		<i>City:</i>	<i>State:</i>	<i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>	
			HVAC	
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>	
HVAC	Heat Pumps	Water Source Packaged Heat Pumps	23-33 17 11 13	
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>	
			H8-A	
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>				
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>	

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the water source heat pump. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impact to the facility during this PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around uncovered electrical leads. Use appropriate PPE.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes. Use of a multimeter is necessary.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping		Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There are electrical risks when working around exposed electrical connections.</p> <p>Risk 2: There is a risk of chemical exposure when cleaning the condensate pan.</p> <p>Risk 3: Failure or removal from service of the unit due to malfunction or degradation of electrical or water systems.</p>
Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use appropriate arc flash PPE when working around electrical connections.</p> <p>Contingency Plan 2: The use of nitrile gloves will provide sufficient protection from chemical exposure during equipment cleaning.</p> <p>Contingency Plan 3: Replacement units are usually available for installation within 24-48 hours. Space will only have building HVAC systems in the interim.</p>



# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	<p>Notify Facility Manager when quarterly and annual PM procedure:</p> <p>Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p> <p>Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p>
CMMS Administrator	<p>Notify CMMS Administrator when PM procedure:</p> <p>Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____</p>

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
<p>NOTES: "(Q)" and "(A)" indicate tasks that are to be completed during Quarterly and Annual PM procedures.</p> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>				
Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Check for safe equipment access.			
3.	Communicate start time to facility manager.			
4.	Open cover and inspect air filter. Change if condition or schedule warrants. Air filters are changed on a quarterly basis or as needed. Write date on new filter when installing replacement.			
5.	<p>Using a multimeter, check and record the voltage and amperage for each lead while unit is in operation.</p> <p>Lead 1: Volts _____ Amps _____</p> <p>Lead 2: Volts _____ Amps _____</p> <p>Lead 3: Volts _____ Amps _____</p>			



<b>6.</b>	Note whether unit is in heating or cooling mode. Using a thermocouple, check and record water temperature prior to entry and upon exit of coil. Record $\Delta T$ .  Mode: Heating <input type="checkbox"/> Cooling <input type="checkbox"/> (check one)  Temp Entering Coil: ____ Temp Exiting Coil: ____ Temp Difference: ____			
<b>7.</b>	Check condensate pan for standing water. Flush and clean, as necessary.			
<b>8.</b>	Close unit and clean up work area.			
<b>9.</b>	Communicate completion time to facility manager and CMMS administrator.			
<b>10.</b>	Communicate completion of tasks to affected occupants.			

<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H9 Fan Coil System Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	HVAC Fan Coil Units	Fan Coil Units	23-33 33 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>Equipment ID:</i>
			H9-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>Facility MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the fan coil unit.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heating and cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO will be used after initial operating inspection is complete.
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Document- tation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	An air compressor/pressurized air or vacuum may be necessary for cleaning purposes.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning condensate pan.	
	Housekeeping		Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the unit.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			
5.	Shut down unit and apply LO/TO.			
6.	Manually rotate the fan wheel to check for obstructions in the housing or interference with fan blades. Clean the fan section with a HEPA vacuum.  If microbial growth is found, thoroughly clean the fan section using a mild bleach and water solution or approved sanitizer.			
7.	Check and adjust motor bracket torque.			
8.	Inspect and blow out condensate drain with compressed air. Add water to pan via hose and make sure it drains properly. Clean and add biocide pad.			
9.	Inspect the condenser coils for dirt and debris. If the coils are dirty, create a W/O to clean the coils.			
10.	Restore unit operation and remove LO/TO.			
11.	Wipe down exterior of unit with damp cloth. A mild cleaning agent may be used.			
12.	Communicate completion of tasks to affected occupants and to facility manager			



<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Ap- proval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>H9 Fan Coil System Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	9/15/2019	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:
			HVAC
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
HVAC Specific Products and Equipment	HVAC Fan Coil Units	Fan Coil Units	23-33 33 11
Equipment Manufacturer:	Model Number:	Serial Number:	Equipment ID:
			H9-A
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
Facility MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the fan coil unit. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
Responsibilities:	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heating and cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO will be used to shut the unit down during this procedure
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Ensure appropriate arc flash PPE is available during this procedure.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	An air compressor/pressurized air and vacuum may be necessary for cleaning purposes.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping		Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the unit.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.





# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			
5.	Shut down unit and apply LO/TO.			
6.	<b>Fan Section</b> <ul style="list-style-type: none"> <li>• Manually rotate the fan wheel to check for obstructions in the housing or interference with fan blades. Clean the fan section with a HEPA vacuum.</li> <li>• Clean the fan wheels. Remove any rust from the shaft with an emery cloth and recoat with L.P.S. 3 or equivalent.</li> <li>• If microbial growth is found, thoroughly clean the fan section using a mild bleach and water solution or approved sanitizer.</li> </ul>			
7.	Check and adjust motor bracket torque.			
8.	Check damper linkages, fan set screws, and blade adjustment. Clean, but do not lubricate, the nylon damper rod bushings.  Clean damper operators.			



<b>9.</b>	Inspect and blow out condensate drain with compressed air. Add water to pan via hose and make sure it drains properly. Clean and add biocide pad.			
<b>10.</b>	Inspect the condenser coils for dirt and debris. If the coils are dirty, create a W/O to clean the coils.			
<b>11.</b>	Inspect, clean, and tighten all electrical connections and wiring.			
<b>12.</b>	Inspect the unit casing for chips corrosion. If damage is found, clean and repaint.  Examine flex connections for cracks or leaks. Repair or replace damaged material.			
<b>13.</b>	Restore unit operation and remove LO/TO.			
<b>14.</b>	Communicate completion of tasks to affected occupants and to facility manager			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H10 Supply/Return Fan and Exhaust Fan Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Air Circulators	Fans	23-33 31 19
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>Equipment ID:</i>
			H10-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>Facility MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the fan.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.

Supply/Return Fan and Exhaust Fan Quarterly PM Procedures



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ventilation in the specific area will be affected while the unit is offline.
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unit must be de-energized during this PM procedure.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Supply/Return Fan and Exhaust Fan Quarterly PM Procedures



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use of nitrile gloves during cleaning is recommended.	
	Housekeeping		Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.
Risks	Risk 1: There should be no impact to normal facility operations.
Contingency Plans	Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?  Contingency Plan 1: Not required.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Observe unit in operation, note any unusual noises and/or vibrations. Inspect for leaks, damage and/or corrosion.			
4.	De-energize unit and apply LO/TO devices.			
5.	If Grease Exhaust, clean grease filters at the hood system.			
6.	If equipped, inspect belts for proper tension and wear. (If belts are replaced, record belt type and replacement date on unit)			
7.	Inspect fan and motor pulleys (as equipped) for proper alignment.			
8.	Clean entire unit, motor and fan assembly with a damp cloth. A mild detergent may be used for cleaning.			
9.	Return unit to service and remove LO/TO devices.			
10.	Grease fan bearings as needed (ref: O&M for greasing intervals), preferably while fan is running.			
11.	Check exhaust fan intake grills for dirt/debris. Clean/vacuum, as necessary.			
12.	Ensure that airflow is within proper parameters.			
13.	Communicate completion time to facility manager and CMMS Administrator.			

Supply/Return Fan and Exhaust Fan Quarterly PM  
Procedures



<b>Section 11:</b> <b>Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H10 Supply/Return Fan and Exhaust Fan Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Air Circulators	Fans	23-33 31 19
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>Equipment ID:</i>
			H10-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>Facility MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the fan.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.

Supply/Return Fan and Exhaust Fan Annual PM Procedures



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ventilation in the specific area will be affected while the unit is offline.
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unit must be de-energized during this PM procedure.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of appropriate arc flash PPE is required during this procedure.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes. Use of multimeter is necessary.

Supply/Return Fan and Exhaust Fan Annual PM Procedures



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use of nitrile gloves during cleaning is recommended.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work <input type="checkbox"/> Hot Work <input type="checkbox"/> Confined Space <input type="checkbox"/> Other (specify) _____			

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Affected area will not be exhausted during this PM procedure. It may be necessary to restrict access/operation of affected space.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: PM should be performed when impact to affected space is minimal.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Observe unit in operation, note any unusual noises and/or vibrations. Inspect for leaks, damage and/or corrosion.			
4.	De-energize unit and apply LO/TO devices.			
5.	If Grease Exhaust, clean grease filters at the hood system.			
6.	If equipped, inspect belts for proper tension and wear. (If belts are replaced, record belt type and replacement date on unit.)			
7.	Inspect fan blades and moving parts for excessive wear.			
8.	Inspect fan and motor pulleys (as equipped) for proper alignment.			
9.	Inspect all fan wiring for deterioration. Ensure tightness of all electrical connections.			
10.	Clean entire unit, motor and fan assembly with a damp cloth. A mild detergent may be used for cleaning.			
11.	Return unit to service and remove LO/TO devices.			
12.	Grease fan and motor bearings as needed (ref: O&M for greasing intervals), preferably while fan is running.			
13.	Using appropriate PPE, check load amps and voltages using a multimeter.			
14.	Check exhaust fan intake grills for dirt/debris. Clean/vacuum, as necessary.			
15.	Ensure that airflow is within proper parameters.			



<b>16.</b>	Communicate completion time to facility manager and CMMS Administrator.			
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<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H11 Evaporative and Spot Coolers Monthly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	2/15/2020	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	HVAC Coolers	HVAC Evaporative Coolers	23-33 45 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			H11-M
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the asset.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO will be used after initial operating inspection is complete.
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided)
	Accessing a roof work area to work on equipment may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.		
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Hand & Power Tools	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Use of ladders and/or fall arrestor safety equipment may be required to access equipment.		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
		Use nitrile gloves when cleaning condensate pan.		
		Use hearing protection during operational equipment inspection.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
5.	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of chemical exposure when cleaning the pan.</p> <p>Risk 2: Accessing a roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 3: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>
Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning the pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 2: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 3: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>



# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>			
Facility Management	Notify Facility Manager when PM procedure:			
	Begins	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
	Is completed	via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone	TIME: _____	
CMMS Administrator	Notify CMMS Administrator when PM procedure:			
	Is completed	via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone	Time/Date: _____	

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			
5.	<b>Operational Overview</b>			
	Listen and feel for any abnormal vibration or noise. If noted, record on the work order.			
6.	<b>LO/TO</b>			
	Turn the unit off, shut off breaker, and follow proper lockout/tag out procedures to deenergize the unit.			
7.	Inspect pads; clean or replace as needed.			
8.	Remove LO/TO devices and return unit to service.			
9.	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			



<b>10.</b>	Communicate completion time to facility manager and CMMS administrator.			
<b>11.</b>	Communicate completion of tasks to affected occupants.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:		
Facility Manager Approval	NAME:	TITLE:	DATE:	
Craft Manager Approval	NAME:	TITLE:	DATE:	
Safety Coordinator Approval	NAME:	TITLE:	DATE:	



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>H11 Evaporative and Spot Coolers Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	2/15/2020	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>	
<i>Street Address:</i>		<i>City:</i>	<i>State:</i>	<i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>	
			HVAC	
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>	
HVAC Specific Products and Equipment	HVAC Coolers	HVAC Evaporative Coolers	23-33 45 13	
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>	
			H11-Q	
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>				
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>	

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the asset.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO will be used after initial operating inspection is complete.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided)
	Accessing a roof work area to work on equipment may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.		
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Hand & Power Tools	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Use of ladders and/or fall arrestor safety equipment may be required to access equipment.		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
		Use nitrile gloves when cleaning condensate pan.		
		Use hearing protection during operational equipment inspection.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of chemical exposure when cleaning the pan.</p> <p>Risk 2: Accessing a roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 3: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>
Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning the pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 2: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 3: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>





# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			
5.	<b>Operational Overview</b>			
	Listen and feel for any abnormal vibration or noise. If noted, record on the work order.			
6.	<b>LO/TO</b>			
	Turn the unit off, shut off breaker, and follow proper lockout/tag out procedures to deenergize the unit.			
7.	Thoroughly clean exterior of unit using a damp cloth. Use only chemical cleaners approved by the manufacturer for that purpose.			
8.	Inspect pads; clean or replace as needed.			
9.	Inspect fan and motor pulleys (as equipped) for proper alignment.			



<b>10.</b>	If equipped, inspect belts for proper tension and wear. (If belts are replaced, record belt type and replacement date on work order.)			
<b>11.</b>	Clean motor and fan assembly with a damp cloth. A mild detergent may be used for cleaning.			
<b>12.</b>	As needed, lubricate motor in accordance with manufacturer recommendations.			
<b>13.</b>	Remove LO/TO devices and return unit to service.			
<b>14.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>15.</b>	Communicate completion time to facility manager and CMMS administrator.			
<b>16.</b>	Communicate completion of tasks to affected occupants.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:	
Craft Manager Approval	NAME:	TITLE:	DATE:	
Safety Coordinator Approval	NAME:	TITLE:	DATE:	



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>H11 Evaporative and Spot Coolers Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	2/15/2020	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:
Street Address:		City:	State: Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:
			HVAC
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
HVAC Specific Products and Equipment	HVAC Coolers	HVAC Evaporative Coolers	23-33 45 13
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			H11-A
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the asset.
Responsibilities:	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooling will be unavailable in affected space during PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LOTO will be used after initial operating inspection is complete.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input checked="" type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided)
Accessing a roof work area to work on equipment may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.			
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>			
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Hand & Power Tools	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Use of ladders and/or fall arrestor safety equipment may be required to access equipment.		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
		Use nitrile gloves when cleaning condensate pan.		
		Use hearing protection during operational equipment inspection.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	<p>Risk 1: There is a risk of chemical exposure when cleaning the pan.</p> <p>Risk 2: Accessing a roof work area may require climbing steep steps or a ladder, and the work area may be near the edge of a parapet-less roof.</p> <p>Risk 3: Failure or removal from service of the unit due to malfunction or degradation of components or systems.</p>
Contingency Plans	<p><i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i></p> <p>Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning the pan. Review SDS of chemical cleaning agents.</p> <p>Contingency Plan 2: Use of fall arrestor safety equipment may be necessary.</p> <p>Contingency Plan 3: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.</p>



# Maintenance Operations Procedure

Assumptions	<p>Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
3.	Check for safe equipment access.			
4.	Communicate start time to facility manager.			
5.	<b>Operational Overview</b>			
	Listen and feel for any abnormal vibration or noise. If noted, record on the work order.			
6.	<b>LO/TO</b>			
	Turn the unit off, shut off breaker, and follow proper lockout/tag out procedures to deenergize the unit.			
7.	Drain water from unit and thoroughly clean reservoir. Use only chemical cleaners approved by the manufacturer for that purpose.			
8.	Thoroughly clean exterior of unit using a damp cloth. Use only chemical cleaners approved by the manufacturer for that purpose.			
9.	Inspect pads; clean or replace as needed.			



<b>10.</b>	Inspect fan and motor pulleys (as equipped) for proper alignment.			
<b>11.</b>	If equipped, inspect belts for proper tension and wear. (If belts are replaced, record belt type and replacement date on work order.)			
<b>12.</b>	Clean motor and fan assembly with a damp cloth. A mild detergent may be used for cleaning.			
<b>13.</b>	As needed, lubricate motor in accordance with manufacturer recommendations.			
<b>14.</b>	Remove LO/TO devices and return unit to service.			
<b>15.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>16.</b>	Communicate completion time to facility manager and CMMS administrator.			
<b>17.</b>	Communicate completion of tasks to affected occupants.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

**For HVAC systems not covered under the H1 through H11 designations, the contractor must complete the following form for each such system and for each PM frequency.**

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>H12 Unique HVAC System PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
Procedure Frequency:		Level of Risk:	

<b>Section 2: Site Information</b>	Facility Name:	Work Order Number:
Street Address:	City:	State: Zip:

<b>Section 3: Procedure Overview</b>	Work Area:	Affected Systems:	
		HVAC	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			H12
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the asset.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>					
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> Define specific impact to affected equipment or systems; lockout/tag out requirements.	
Electrical Utility Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Emergency Generator System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Heating/Cooling System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ventilation System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Uninterruptible Power Supply System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Power Distribution System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fire Detection Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fire Suppression System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Monitoring System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Control System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Security System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
General Power and Lighting System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lockout/Tag Out Required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Provide any additional relevant detail not covered above:</i>					



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at:

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input type="checkbox"/> Other (describe):		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Electrical	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Hand & Power Tools	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Fall Protection	<input type="checkbox"/> Yes <input type="checkbox"/> No	



	Hot Work	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Other	<input type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1:  Risk 2:
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1:  Contingency Plan 2:
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

<b>Step</b>	<b>Procedure</b>	<b>Time</b>	<b>Date</b>	<b>Initials</b>
1.				




<b>Section 11:</b> <b>Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E1 Electrical Panels Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			Electrical
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
Electrical and Lighting	Electrical Power Distribution Devices	Distribution Panel Boards	23-35 31 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			E1-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the electrical panels installed throughout the building.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impact to electrical systems unless a failure is discovered or occurs during the course of the procedure.
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of arc flash PPE is required during this procedure. A safety partner is recommended for this procedure.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes. Use of a temp gun is necessary.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: These procedures should be conducted with a safety partner, and appropriate arc flash PPE will be worn.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access. Ensure no obstacles are placed within 36 inches of panel.			
2.	Communicate start time to facility manager.			
3.	Verify panel name, location and id. Placarding should include "fed from" and "area fed" information. Add or update, if necessary.			
4.	Clean the panel as follows: <ul style="list-style-type: none"> <li>• Use a HEPA style vacuum to remove exterior dust on panel.</li> <li>• With a non-static, non-lint cloth, and using only nonflammable solvent, wipe the exterior of the panel down</li> </ul>			
5.	Verify panel schedule is accurate; update if needed.			
6.	Verify a log of tripped breakers is maintained for the panel.			
7.	Note the status of each breaker within the panel. Verify that breakers labeled "spare" (per the panel schedule) are in the OFF position. Tripped breakers shall be logged and investigated before being reset.			
8.	Don proper PPE based on arc flash assessment of panel.			
9.	Remove dead front and perform a visual inspection of wires that connect to breakers, ground lugs and neutrals. Look for cracked or bubbling insulation and discoloration of wires, breakers and lugs.			
11.	Using a multimeter, measure voltage of panel feed and record (see below)L1, L2 and L3.			



<b>12.</b>	Using an amp clamp, verify amperage per leg feeding panel and record L1, L2 and L3.			
	Lead 1: Volts _____ Amps _____			
	Lead 2: Volts _____ Amps _____			
	Lead 3: Volts _____ Amps _____			
<b>13.</b>	Using a multimeter, measure and record voltage on each breaker. Use a copy of the panel schedule to record findings.			
<b>14.</b>	Using a multimeter, measure and record amperage load on each breaker. Use a copy of the panel schedule to record findings.  Verify that there isn't more than 80% load on the rated breaker. For example, a 20-amp breaker should have no more than 16 amps of load.			
<b>15.</b>	Using a temp gun, look for hot spots on breakers and wires. Record anything that is out of the ordinary on the copy of the panel schedule.			
<b>16.</b>	If findings require follow-up, create and submit a new work order.			
<b>17.</b>	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:	
Craft Manager Approval	NAME:	TITLE:	DATE:	
Safety Coordinator Approval	NAME:	TITLE:	DATE:	



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>E1 Electrical Panels Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2018	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:	
			Electrical	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:	
Electrical and Lighting	Electrical Power Distribution Devices	Distribution Panel Boards	23-35 31 13	
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:	
			E1-A	
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.				
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:	

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:		
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.		
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the electrical panels installed throughout the building.		
Responsibilities:			
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.		



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exercising breakers will affect normal electrical service to building equipment and systems.
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of arc flash PPE is required during this procedure. A safety partner is recommended for this procedure.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes. Use of an IR scanner is necessary.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Potential disruption to occupants or building systems when exercising breakers.  Risk 2: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Proper planning and notification procedures will be followed to ensure minimal disruption to facility occupants. Completion of maintenance must be communicated so occupants can resolve disruptions caused by exercising breakers.  Contingency Plan 2: These procedures should be conducted with a safety partner, and appropriate arc flash PPE will be worn.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.





# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Check for safe equipment access. Ensure no obstacles are placed within 36 inches of panel.			
3.	Communicate start time to facility manager.			
4.	Verify panel name, location and id. Placarding should include "fed from" and "area fed" information. Add or update, if necessary.			
5.	Clean the panel as follows: <ul style="list-style-type: none"> <li>• Use a HEPA style vacuum to remove exterior dust on panel.</li> <li>• With a non-static, non-lint cloth, and using only non-flammable solvent, wipe the exterior of the panel down</li> </ul>			
6.	Verify panel schedule is accurate; update if needed.			
7.	Verify a log of tripped breakers is maintained for the panel.			
8.	Note the status of each breaker within the panel. Verify that breakers labeled "spare" (per the panel schedule) are in the OFF position. Tripped breakers shall be logged and investigated before being reset.			
9.	Don proper PPE based on arc flash assessment of panel.			
10.	Remove dead front and perform a visual inspection of wires that connect to breakers, ground lugs and neutrals. Look for cracked or bubbling insulation and discoloration of wires, breakers and lugs.			
11.	Using a multimeter, measure voltage of panel feed and record (see below) L1, L2 and L3.			



<b>12.</b>	Using an amp clamp, verify amperage per leg feeding panel and record L1, L2 and L3.			
	Lead 1: Volts _____ Amps _____			
	Lead 2: Volts _____ Amps _____			
	Lead 3: Volts _____ Amps _____			
<b>13.</b>	Using a multimeter, measure and record voltage on each breaker. Use a copy of the panel schedule to record findings.			
<b>14</b>	Using a multimeter, measure and record amperage load on each breaker. Use a copy of the panel schedule to record findings.  Verify that there isn't more than 80% load on the rated breaker. For example, a 20-amp breaker should have no more than 16 amps of load.			
<b>15.</b>	Using an IR scanner, look for hot spots on breakers and wires. Record anything that is out of the ordinary.			
<b>16.</b>	Using an insulated screw driver or nut driver, verify tightness of the lug according to manufacturer specifications.			
<b>17.</b>	Exercise each breaker by noting its current state, switching it to the opposite of its state, then returning it to its original position.  <b>CAUTION: As this step will potentially disrupt building occupants or systems, prior coordination is critical.</b>			
<b>18.</b>	If findings require follow-up, create and submit a new work order.			
<b>19.</b>	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E2 Emergency Generator Monthly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>	
<i>Street Address:</i>		<i>City:</i>	<i>State:</i>	<i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>	
			Emergency Power	
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>	
Electrical and Lighting	Electrical Generators	Electrical Generation Diesel Engines	23-35 11 12 11	
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>	
			E2-M	
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>				
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>	

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, ensure efficient operations, comply with environmental regulations, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the Emergency Generator system. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency power will be temporarily unavailable during this procedure.
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD]

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input checked="" type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input checked="" type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for diesel fuel and all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around batteries and electrical components.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Some hand tools may be required.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use hearing protection during the test run. Risk of exposure to hazardous chemicals (diesel fuel) to be mitigated through use of gloves and eye protection.		
	Housekeeping	Remove any debris from engine area prior to beginning work. Follow hazardous materials requirements for diesel fuel-contaminated items and any diesel fuel-contaminated water solutions. Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Generator will not be in the start line-up in the event of a utility failure.  Risk 2: Running the diesel engine during the Superior Court’s operational hours will disrupt Court’s operations.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: In the event of utility power loss, battery back-up power will be available for emergency lighting. Maintenance technician will cease this maintenance procedure and restore unit operation as quickly as possible to allow production of generator power.  Contingency Plan 2: Avoid running the engine for PM during Court’s operational hours.



# Maintenance Operations Procedure

Assumptions	<p>Assumption 1: All plant operations are normal and generators are not needed. Weather does not present a risk of utility failure due to inclement conditions.</p> <p>Assumption 2: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when quarterly and annual PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>			
<b>NOTES:</b> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>				
Step	Procedure	Time	Date	Initials
1.	Communicate with facility point of contact. Disclose purpose of work, expected time frame, and period when emergency power generation will be unavailable. If necessary, reschedule to a more appropriate time.			
2.	Check for safe equipment access. Inventory all required tools prior to beginning PM tasks.			
3.	Communicate start time to facility manager.			
4.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
5.	<b>Visual Inspection</b>			
	Perform a visual inspection of overall condition of unit to identify foreign objects, loose or broken fittings, integrity of belly tanks, guards, and other components.			
	Clean exterior of unit of oil, coolant, fuel, and acid deposits using chemical resistant gloves.			



<b>6.</b>	<b>Prepare for Test Run</b> Verify engine log includes data for all previous engine operations.			
	<i>Fluids</i> <ul style="list-style-type: none"> <li>• Check for leaks on all connections</li> <li>• Check engine oil level</li> <li>• Check engine coolant level</li> <li>• Check fuel level</li> <li>• Inspect air input filters</li> </ul>			
	<i>Electrical</i> <ul style="list-style-type: none"> <li>• Battery charger operation and float voltage</li> <li>• Battery voltage</li> <li>• Battery Electrolyte level</li> <li>• Battery connections</li> <li>• Circuit breaker status</li> <li>• Control panel status</li> <li>• Inspect electrical wiring and connections</li> </ul>			
<b>6.</b>	<b>Conduct 30 Minute Test Run</b> <ul style="list-style-type: none"> <li>• Verify inlet dampers are open.</li> <li>• Check for fluid leaks.</li> <li>• Record oil pressure, coolant temp, output voltage and frequency.</li> </ul>			
<b>7.</b>	Conclude test run, log engine operation details in the engine log, and complete report. Upload run log to the work order.			
<b>8.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit			
<b>9.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E2 Emergency Generator Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			Emergency Power
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
Electrical and Lighting	Electrical Generators	Electrical Generation Diesel Engines	23-35 11 12 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			E2-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, ensure efficient operations, comply with environmental regulations, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the Emergency Generator system. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency power will be temporarily unavailable during the test run.
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD]

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input checked="" type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input checked="" type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for diesel fuel and all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around batteries and electrical components.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Some hand tools may be required.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use hearing protection during the engine test run. Risk of exposure to hazardous chemicals (diesel fuel) to be mitigated through use of gloves and eye protection.		
	Housekeeping	Remove any debris from engine area prior to beginning work. Follow hazardous materials requirements for diesel fuel-contaminated items and any diesel fuel-contaminated water solutions. Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Generator will not be in the start line-up in the event of a utility failure.  Risk 2: Running the diesel engine during the Superior Court's operational hours will disrupt Court's operations.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: In the event of utility power loss, battery back-up power will be available for emergency lighting. Maintenance technician will cease this maintenance procedure and restore unit operation as quickly as possible to allow production of generator power.  Contingency Plan 2: Avoid running the engine for PM during Court's operational hours.



# Maintenance Operations Procedure

Assumptions	<p>Assumption 1: All facility operations are normal and generators are not needed. Weather or other conditions do not present a risk of utility failure.</p> <p>Assumption 2: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	<p>Notify Facility Manager when quarterly and annual PM procedure:</p> <p>Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p> <p>Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____</p>
CMMS Administrator	<p>Notify CMMS Administrator when PM procedure:</p> <p>Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____</p>

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
<p>NOTES:</p> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>	

Step	Procedure	Time	Date	Initials
1.	Communicate with facility point of contact. Disclose purpose of work, expected time frame, and period when emergency power generation will be unavailable. If necessary, reschedule to a more appropriate time.			
2.	Check for safe equipment access. Inventory all required tools and replacement parts prior to beginning PM tasks.			
3.	Communicate start time to facility manager.			
4.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
5.	<b>Visual Inspection</b>			
	Verify engine log includes data for all previous engine operations.			
	Perform a visual inspection of overall condition of unit to identify foreign objects, loose or broken fittings, guards, and components.			
	Clean exterior of unit of oil, coolant, fuel, and acid deposits using chemical resistant gloves.			



**Prepare for Test Run.**

Isolate the generator from the automatic start system and perform the following inspections in preparation for the test run.

<b>6.</b>	<b>Cooling System</b>			
	Inspect for leaks, damage, and debris.			
	<i>Coolant:</i>			
	<ul style="list-style-type: none"> <li>Inspect for correct level and condition of coolant (rust, oil, and contaminants).</li> <li>Check coolant conditioner concentration and temperature protection.</li> <li>Check filler cap gasket and sealing surface.</li> </ul>			
	<i>Hoses and Connections:</i>			
	<ul style="list-style-type: none"> <li>Inspect all hoses for deterioration.</li> <li>Check for security.</li> </ul>			
	<i>Fan Drive Pulley:</i>			
	<ul style="list-style-type: none"> <li>Check for loose or worn pulleys and lube fan drive bearing.</li> <li>Check fan operational clearance.</li> </ul>			
<b>7.</b>	<b>Fuel System</b>			
	Inspect day tanks for leaks and fuel level. Test day tank pump for proper operation.			
	<i>Water Trap/Separator</i>			
	<ul style="list-style-type: none"> <li>Drain water from water separator if necessary.</li> </ul>			
	<i>Fuel lines and connections</i>			
	<ul style="list-style-type: none"> <li>Inspect for leaks and security of line brackets.</li> </ul>			
<b>7.</b>	<i>Governor and controls</i>			
	<ul style="list-style-type: none"> <li>Inspect controls and linkage for proper operation.</li> </ul>			
	<i>Fuel Filters</i>			
	<ul style="list-style-type: none"> <li>Replace. Inspect for proper sealing and operation. Inspect primary and secondary for damage, and leaks.</li> </ul>			



# Maintenance Operations Procedure

<b>8.</b>	<b>Air Induction and Exhaust System</b>			
	Note reading on air service indicator and reset.			
	<i>Air filter:</i>			
	<ul style="list-style-type: none"> <li>Inspect and clean or replace as necessary.</li> </ul>			
	<i>Air Inlet System:</i>			
	<ul style="list-style-type: none"> <li>Inspect piping and air filter housing for damage, loose connections, and evidence of leaks.</li> <li>Clean air filter housing and inspect seals and gaskets.</li> </ul>			
	<i>Turbocharger/Supercharger (as applicable):</i>			
	<ul style="list-style-type: none"> <li>Inspect for oil and exhaust leakage.</li> <li>Check for unusual noises and oil leakage.</li> </ul>			
	<i>Exhaust Manifold:</i>			
	<ul style="list-style-type: none"> <li>Inspect for damage, loose or missing hardware, evidence of exhaust leakage.</li> <li>Inspect for oil sludging.</li> </ul>			
	<i>Exhaust System:</i>			
	<ul style="list-style-type: none"> <li>Inspect silencer and piping for damage, corrosion, or leakage.</li> <li>Check rain cap.</li> <li>Check supports for vibration damage and security.</li> </ul>			
<b>9.</b>	<b>Lube Oil System</b>			
	Check oil level and visually inspect for contamination and leaks.			
	<i>Oil and filters:</i>			
	<ul style="list-style-type: none"> <li>Replace. Inspect for proper sealing and operation.</li> </ul>			
	<i>Crankcase Breather:</i>			
	<ul style="list-style-type: none"> <li>Inspect and clean or replace if applicable.</li> <li>Inspect hose connections and inspect for deterioration.</li> </ul>			
<b>Conduct 30 Minute Test Run.</b>				
Perform the following inspections/checks while the generator is running.				
<b>10.</b>	<b>Cooling System</b>			
	<ul style="list-style-type: none"> <li>Verify inlet dampers are open.</li> <li>Check for fluid leaks.</li> <li>Record coolant temperature at conclusion of test run.</li> </ul>			
<b>11.</b>	<b>Fuel System</b>			
	<ul style="list-style-type: none"> <li>Perform an operational check of fuel pressure gauge. Verify correct pressure is being delivered.</li> </ul>			



<b>12.</b>	<b>Air Induction and Exhaust System</b>			
	<i>Turbocharger/Supercharger (as applicable):</i>			
	<ul style="list-style-type: none"> <li>Inspect for oil and exhaust leakage.</li> <li>Check for unusual noises and oil leakage.</li> </ul>			
	<i>Exhaust Manifold:</i>			
	<ul style="list-style-type: none"> <li>Inspect for evidence of exhaust leakage.</li> </ul>			
<b>13.</b>	<b>Lube Oil System</b>			
	<i>Oil Pressure:</i>			
	<ul style="list-style-type: none"> <li>Perform an operational check of gauge.</li> <li>Record oil pressure.</li> <li>Perform an operational and visual inspection of pre-lube pump.</li> </ul>			
	<i>Crankcase Breather:</i>			
	<ul style="list-style-type: none"> <li>Inspect for proper operation.</li> <li>Note excessive blow-by.</li> </ul>			
<b>14.</b>	<b>Control Panel</b>			
	<p>Check auto/manual start operations for proper operations if allowed.</p> <ul style="list-style-type: none"> <li>Voltmeter: Operational check with no load and load conditions.</li> <li>Amp meter: Operational check with no load and load conditions.</li> <li>Frequency: Operational check with no load and load conditions.</li> <li>Circuit Breakers: Inspect for free movement and tight connections.</li> </ul>			
<b>15.</b>	Conclude test run, log engine operation details in the engine log, and complete report. Upload run log to the work order.			
<b>16.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit			
<b>17.</b>	Contact facility manager and CMMS administrator and inform them the procedure has been completed.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>E2 Emergency Generator Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2019	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:	
			Emergency Power	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:	
Electrical and Lighting	Electrical Generators	Electrical Generation Diesel Engines	23-35 11 12 11	
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:	
			E2-A	
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.				
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:	

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, ensure efficient operations, comply with environmental regulations, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the Emergency Generator system. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency power will be temporarily unavailable during the test run.
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD]

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input checked="" type="checkbox"/> Other (List in spaces provided) Noise hazard.
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input checked="" type="checkbox"/> Reflective Vest / Clothing	<input checked="" type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input checked="" type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for diesel fuel and all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Exercise caution when working around batteries and electrical components.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Some hand tools may be required.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use hearing protection during the engine test run. Risk of exposure to hazardous chemicals (diesel fuel) to be mitigated through use of gloves and eye protection.		
	Housekeeping	Remove any debris from engine area prior to beginning work. Follow hazardous materials requirements for engine oil and diesel fuel-contaminated items and any oil/diesel fuel-contaminated water solutions. Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input checked="" type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Generator will not be in the start line-up in the event of a utility failure.  Risk 2: Running the diesel engine during the Superior Court’s operational hours will disrupt Court’s operations.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: In the event of utility power loss, battery back-up power will be available for emergency lighting. Maintenance technician will cease this maintenance procedure and restore unit operation as quickly as possible to allow production of generator power.  Contingency Plan 2: Avoid running the engine for PM during Court’s operational hours.



# Maintenance Operations Procedure

Assumptions	<p>Assumption 1: All facility operations are normal and generators are not needed. Weather or other conditions do not present a risk of utility failure.</p> <p>Assumption 2: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.</p> <p>Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.</p>
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<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when quarterly and annual PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
<b>NOTES:</b> <ul style="list-style-type: none"> <li>• Verify that Change Management approval has been received prior to performing work.</li> <li>• Log Time for major steps.</li> <li>• Notify facility management of unanticipated impacts to timeline.</li> </ul>	

Step	Procedure	Time	Date	Initials
1.	Communicate with facility point of contact. Disclose purpose of work, expected time frame, and period when emergency power generation will be unavailable. If necessary, reschedule to a more appropriate time.			
2.	Reference manufacturer procedures for the specific make and model of generator. Verify manufacturer test procedures are met by this PM prior to beginning test, or use test procedure specified by manufacturer.			
3.	Check for safe equipment access. Inventory all required tools and replacement parts prior to beginning PM tasks.			
4.	Communicate start time to facility manager.			
5.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
6.	<b>Visual Inspection</b>			
	Verify engine log includes data for all previous engine operations.			
	Perform a visual inspection of overall condition of unit to identify foreign objects, loose or broken fittings, guards, and components.			
	Clean exterior of unit of oil, coolant, fuel, and acid deposits using chemical resistant gloves.			



**Prepare for Test Run.**

Isolate the generator from the automatic start system and perform the following inspections in preparation for the test run.

<b>7.</b>	<b>Cooling System</b>			
	Inspect for leaks, damage, and debris.			
	<i>Coolant:</i>			
	<ul style="list-style-type: none"> <li>Inspect for correct level and condition of coolant (rust, oil, and contaminants).</li> <li>Check coolant conditioner concentration and temperature protection.</li> <li>Check filler cap gasket and sealing surface.</li> </ul>			
	<i>Hoses and Connections:</i>			
	<ul style="list-style-type: none"> <li>Inspect all hoses for deterioration.</li> <li>Check for security.</li> </ul>			
	<i>Fan Drive Pulley:</i>			
	<ul style="list-style-type: none"> <li>Check for loose or worn pulleys and lube fan drive bearing.</li> <li>Check fan operational clearance.</li> </ul>			
<b>8.</b>	<b>Fuel System</b>			
	Inspect day tanks for leaks and fuel level. Test day tank pump for proper operation.			
	<i>Water Trap/Separator</i>			
	<ul style="list-style-type: none"> <li>Drain water from water separator if necessary.</li> </ul>			
	<i>Fuel lines and connections</i>			
	<ul style="list-style-type: none"> <li>Inspect for leaks and security of line brackets.</li> </ul>			
<b>8.</b>	<i>Governor and controls</i>			
	<ul style="list-style-type: none"> <li>Inspect controls and linkage for proper operation.</li> </ul>			
	<i>Fuel Filters</i>			
	<ul style="list-style-type: none"> <li>Replace. Inspect for proper sealing and operation. Inspect primary and secondary for damage, and leaks.</li> </ul>			



# Maintenance Operations Procedure

<b>9.</b>	<b>Air Induction and Exhaust System</b>			
	Note reading on air service indicator and reset.			
	<i>Air filter:</i>			
	<ul style="list-style-type: none"> <li>Inspect and clean or replace as necessary.</li> </ul>			
	<i>Air Inlet System:</i>			
	<ul style="list-style-type: none"> <li>Inspect piping and air filter housing for damage, loose connections, and evidence of leaks.</li> <li>Clean air filter housing and inspect seals and gaskets.</li> </ul>			
	<i>Turbocharger/Supercharger (as applicable):</i>			
	<ul style="list-style-type: none"> <li>Inspect for oil and exhaust leakage.</li> <li>Check for unusual noises and oil leakage.</li> </ul>			
	<i>Exhaust Manifold:</i>			
	<ul style="list-style-type: none"> <li>Inspect for damage, loose or missing hardware, evidence of exhaust leakage.</li> <li>Inspect for oil sludging.</li> </ul>			
	<i>Exhaust System:</i>			
	<ul style="list-style-type: none"> <li>Inspect silencer and piping for damage, corrosion, or leakage.</li> <li>Check rain cap.</li> <li>Check supports for vibration damage and security.</li> </ul>			
<b>10.</b>	<b>Lube Oil System</b>			
	Check oil level and visually inspect for contamination and leaks.			
	<i>Oil and filters:</i>			
	<ul style="list-style-type: none"> <li>Replace. Inspect for proper sealing and operation.</li> </ul>			
	<i>Crankcase Breather:</i>			
	<ul style="list-style-type: none"> <li>Inspect and clean or replace if applicable.</li> <li>Inspect hose connections and inspect for deterioration.</li> </ul>			
<b>11.</b>	<b>Load Bank Setup</b>			
	The load bank should be connected in parallel with the building load so that, in case of an outage during the load bank exercise, the generator can provide equivalent loads in case of failure of the primary source.			
<b>Conduct 90 Minute Test Run.</b>				
Perform the following inspections/checks while the generator is running.				
<b>12.</b>	<b>Cooling System</b>			
	<ul style="list-style-type: none"> <li>Verify inlet dampers are open.</li> <li>Check for fluid leaks.</li> <li>Record coolant temperature at conclusion of test run.</li> </ul>			



13.	<p><b>Fuel System</b></p> <ul style="list-style-type: none"> <li>Perform an operational check of fuel pressure gauge. Verify correct pressure is being delivered.</li> </ul>			
14.	<p><b>Air Induction and Exhaust System</b></p> <p><i>Turbocharger/Supercharger (as applicable):</i></p> <ul style="list-style-type: none"> <li>Inspect for oil and exhaust leakage.</li> <li>Check for unusual noises and oil leakage.</li> </ul> <p><i>Exhaust Manifold:</i></p> <ul style="list-style-type: none"> <li>Inspect for evidence of exhaust leakage.</li> </ul>			
15.	<p><b>Lube Oil System</b></p> <p><i>Oil Pressure:</i></p> <ul style="list-style-type: none"> <li>Perform an operational check of gauge.</li> <li>Record oil pressure.</li> <li>Perform an operational and visual inspection of pre-lube pump.</li> </ul> <p><i>Crankcase Breather:</i></p> <ul style="list-style-type: none"> <li>Inspect for proper operation.</li> <li>Note excessive blow-by.</li> </ul>			
16.	<p><b>Control Panel</b></p> <p>Check auto/manual start operations for proper operations if allowed.</p> <ul style="list-style-type: none"> <li>Voltmeter: Operational check with no load and load conditions.</li> <li>Amp meter: Operational check with no load and load conditions.</li> <li>Frequency: Operational check with no load and load conditions.</li> <li>Circuit Breakers: Inspect for free movement and tight connections.</li> </ul>			
17.	<p><b>Load Bank Testing</b></p> <ul style="list-style-type: none"> <li>Load bank testing should not begin until the generator has reached its normal operating temperature. Verify that all fluid levels and pressures are normal, and that there are no abnormal sounds, vibrations, or other indications that may indicate the generator is running outside of normal parameters.</li> <li>Begin load testing by starting with a larger (200 volt or greater) load, and then adding progressively smaller loads. This continues until each leg carries 50% of the max load designed for the leg</li> <li>Check and record the amperage associated with each leg. The current should be half of the rated watt output divided by the voltage for each leg. If one or more of the legs drops below 105 volts at full load, there is a problem and the test is considered failed.</li> <li>Continue to monitor the generator for the duration of the test, ensuring fluid levels/pressures remain in normal operating ranges, and no abnormal noises, vibrations or other problem indicators are observed.</li> <li>After at least 60 minutes of operation under load, gradually remove loads from the generator before shutting down.</li> </ul>			





# Maintenance Operations Procedure

<b>18.</b>	Conclude test run, log engine operation details in the engine log, and complete report. Upload run log to the work order.			
<b>19.</b>	Refill diesel fuel tank to 85% capacity and add fuel additive products, as appropriate. Inspect and verify fuel storage system components are operating properly.			
<b>20.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit			
<b>21.</b>	Contact facility manager and CMMS administrator and inform them the procedure has been completed.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:	
Craft Manager Approval	NAME:	TITLE:	DATE:	
Safety Coordinator Approval	NAME:	TITLE:	DATE:	





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E3 Motor Control Center (MCC) Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			Electrical
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
Electrical and Lighting	Electrical Power Distribution Devices	Motor Control Centers	23-35 31 23
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			E3-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the motor control centers installed throughout the building.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	It may be necessary to deenergize the MCC, affecting associated building systems.
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of arc flash PPE is required during this procedure. A safety partner is recommended for this procedure.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      May require use of a vacuum for cleaning purposes.		
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
		Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Potential disruption to occupants or building systems if an MCC must be deenergized.  Risk 2: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Proper planning and notification procedures will be followed to ensure minimal disruption to facility systems and occupants.  Contingency Plan 2: These procedures should be conducted with a safety partner, and appropriate PPE will be worn.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access. Ensure no obstacles are placed within 36 inches of MCC.			
2.	Communicate start time to facility manager.			
3.	Verify a log of tripped breakers is maintained for the MCC.			
4.	Verify MCC name, location and id. Placarding should include “fed from” and “area fed” information. Add or update, if necessary.			
5.	Clean the MCC as follows: <ul style="list-style-type: none"> <li>• Use a HEPA style vacuum to remove exterior dust on unit.</li> <li>• With a non-static, non-lint cloth, and using only nonflammable solvent, wipe the exterior of the unit down</li> </ul>			
6.	Don proper PPE based on arc flash assessment of panel.			
7.	If a HAND-OFF-AUTO (HOA) switch is present, verify that unit operates in all three states.			
8.	If applicable, make sure that all the lights work.			
9.	Open the door. It may be necessary to de-energize the MCC to access the interior.			
10.	Once door is open, look for anything out of the ordinary such as mis-colored wires or components.			
11.	Look for any abnormal sounds, smells or vibrations.			
12.	If applicable, use a multimeter to check for the same voltage on both sides of all fuses.			
13.	Using a multimeter, check voltage on transformer including control voltage.			



<b>14.</b>	If applicable, check starter for any abnormal signs of damage.			
<b>15.</b>	Visually inspect the contactor look for pitting or damage.			
<b>16.</b>	If applicable, visually inspect overload relay.			
<b>17.</b>	Close door and return MCC to normal operation.			
<b>18.</b>	If findings require follow-up, create and submit a new work order.			
<b>19.</b>	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E3 Motor Control Center (MCC) Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			Electrical
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
Electrical and Lighting	Electrical Power Distribution Devices	Motor Control Centers	23-35 31 23
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			E3-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the motor control centers installed throughout the building.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	It may be necessary to deenergize the MCC, affecting associated building systems.
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of arc flash PPE is required during this procedure. A safety partner is recommended for this procedure.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Potential disruption to occupants or building systems if an MCC must be deenergized.  Risk 2: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Proper planning and notification procedures will be followed to ensure minimal disruption to facility systems and occupants.  Contingency Plan 2: These procedures should be conducted with a safety partner, and appropriate PPE will be worn.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access. Ensure no obstacles are placed within 36 inches of MCC.			
2.	Communicate start time to facility manager.			
3.	Verify a log of tripped breakers is maintained for the MCC.			
4.	Verify MCC name, location and id. Placarding should include “fed from” and “area fed” information. Add or update, if necessary.			
5.	Clean the MCC as follows: <ul style="list-style-type: none"> <li>• Use a HEPA style vacuum to remove exterior dust on unit.</li> <li>• With a non-static, non-lint cloth, and using only nonflammable solvent, wipe the exterior of the unit down</li> </ul>			
6.	Don proper PPE based on arc flash assessment of panel.			
7.	If a HAND-OFF-AUTO (HOA) switch is present, verify that unit operates in all three states.			
8.	If applicable, make sure that all the lights work.			
9.	Open the door. It may be necessary to de-energize the MCC to access the interior.			
10.	Once door is open, look for anything out of the ordinary such as mis-colored wires or components.			
11.	Using an IR scanner, look for hot spots on breakers and wires. Record anything that is out of the ordinary.			
12.	Look for any abnormal sounds, smells or vibrations.			



<b>13.</b>	If applicable, use a multimeter to check for the same voltage on both sides of all fuses.			
<b>14</b>	Using a multimeter, check voltage on transformer including control voltage.			
<b>15.</b>	If applicable, check starter for any abnormal signs of damage.			
<b>16.</b>	Visually inspect the contactor look for pitting or damage.			
<b>17.</b>	If applicable, visually inspect overload relay.			
<b>18.</b>	Close door and return MCC to normal operation.			
<b>19.</b>	If findings require follow-up, create and submit a new work order.			
<b>20.</b>	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E4 Automatic Transfer Switch Monthly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>	
<i>Street Address:</i>		<i>City:</i>	<i>State:</i>	<i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>	
			Electrical	
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>	
Electrical	Electrical Switches	Automatic Transfer Switches	23-35 37 11	
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>	
			E4-M	
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>				
<i>Facility MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>	

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the automatic transfer switches.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No interruption of normal operations will be experienced during this procedure.
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Impalement
		<input type="checkbox"/> Other (List in spaces provided)	<input type="checkbox"/> Sharp Edges/ Pinch Points
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Face Shield	<input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron
	<input type="checkbox"/> Other (describe):	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator
	<input type="checkbox"/> Radio		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Hand & Power Tools	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: These procedures should be conducted with a safety partner. There should be no reason to open cabinet or risk exposure to electrical systems.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Critical Facility Work Rules. Notify Leadership before any change is made.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate start time to facility manager.			
2.	Conduct a thorough visual inspection of the exterior cabinet of the switch, looking for any signs of failure, arcing, or intrusion by pests.			
3.	Note status of switch and indicator lights (as installed), and verify normal operation.			
4.	If issues are discovered, create a work order for follow up actions.			
5.	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>
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Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E4 Automatic Transfer Switch Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			Electrical
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
Electrical	Electrical Switches	Automatic Transfer Switches	23-35 37 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			E4-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>Facility MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the automatic transfer switches.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No interruption of normal operations will be experienced during this procedure.
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input type="checkbox"/> Other (describe):		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Hand & Power Tools	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: These procedures should be conducted with a safety partner. There should be no reason to open cabinet or risk exposure to electrical systems.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Critical Facility Work Rules. Notify Leadership before any change is made.





# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate start time to facility manager.			
2.	Conduct a thorough visual inspection of the exterior cabinet of the switch, looking for any signs of failure, arcing, or intrusion by pests.			
3.	Note status of switch and indicator lights (as installed), and verify normal operation.			
4.	In conjunction with Emergency Generator Quarterly PM Procedure, witness the operation of the transfer switch as power is transferred from the utility source to the generator. Verify normal function of switch and indicator lights, as installed			
5.	If issues are discovered, create a work order for follow up actions.			
6.	Communicate completion time to facility manager and CMMS Administrator.			



<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E4 Automatic Transfer Switch Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			Electrical
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
Electrical	Electrical Switches	Automatic Transfer Switches	23-35 37 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			E4-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>Facility MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the automatic transfer switches.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency power from the affected source will be unavailable.
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of arc flash PPE is required during this procedure. A safety partner is recommended for this procedure.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input checked="" type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Potential disruption to occupants or building systems if emergency power is needed.  Risk 2: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Appropriate backup systems should be in place.  Contingency Plan 2: These procedures should be conducted with a safety partner, and appropriate arc flash PPE will be worn.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Critical Facility Work Rules. Notify Leadership before any change is made.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Communicate with affected occupants. Disclose purpose of work, expected time frame, and expected impact to environment. If necessary, reschedule to a more appropriate time.			
2.	Check for safe equipment access. Ensure no obstacles are placed within 36 inches of panel.			
3.	Communicate start time to facility manager.			
4.	Conduct infrared thermal survey.			
5.	Disable remote control and automatic transfer schemes. De-energize all direct and back feed power and control sources, test and ground. Disconnect all voltage and control power transformers. Open all disconnects. Apply LO/TO devices.			
6.	Access the interior of the unit and clean as follows: <ul style="list-style-type: none"> <li>• Use a HEPA style vacuum to remove interior dust and particles.</li> <li>• With a dry non-static, non-lint cloth, wipe all bus bars, insulators, cables and so on.</li> </ul> <i>NOTE: Do NOT use compressed air to clean the unit interior.</i>			
7.	Check interior of unit carefully for moisture, condensation build-up, or signs of previous wetness. Inspect all conduit entrances and cracks between the enclosure panels for dripping leaks. If necessary, seal off any areas where water intrusion is discovered.			
8.	Inspect switch for discoloration or flaking that may indicate overheating. If overheating is discovered, inspect connections for looseness or contamination and correct any issues.			



<b>9.</b>	Check for signs of rodent activity (nests or droppings). If found, record and advise facility manager that a pest control program needs to be implemented or upgraded.			
<b>10.</b>	Inspect all devices for visible signs of wear, cracking or missing parts.			
<b>11.</b>	Inspect all cabling for damage or discoloration.			
<b>12.</b>	Test all grounding sources.			
<b>13.</b>	Open and close contacts several times to verify they are working properly. Check for proper breaker contact resistance.			
	Inspection and check operation of Pringle and Bolted pressure switches, if applicable.			
<b>14.</b>	Verify that all key interlocks and door interlocking provisions are working properly.			
<b>15.</b>	Check all bus bar joints and terminal lugs for pitting, corrosion or discoloration resulting from high temps or subjection to high fault conditions. Replace damaged bus bars and lugs. Verify proper torque of lugs.  <i>NOTE: Bus bars do not require retightening.</i>			
<b>16.</b>	Inspect all insulating materials. replace any insulators having visible damage (e.g., cracks).			
<b>17.</b>	Perform a visual inspection of transformer and conduct oil sampling, if applicable.			
<b>18.</b>	Close unit, remove LO/TO device, and re-energize.			
<b>19.</b>	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E5 Building Automation Systems Annual PM Procedures</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	2/15/2020	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			E5-A

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of the Building Automation Systems (BAS) Annual Maintenance program is to ensure that the system is operating within required efficiency levels and is meeting the needs of the building's operational purpose and occupants.
<i>Scope:</i>	<p>The service provider shall be knowledgeable of the BAS installed in the subject facility, and shall perform an annual review and evaluation of the BAS with the following objectives:</p> <ul style="list-style-type: none"> <li>• Make a general operations review of all the systems sequence of operation and controllers status.</li> <li>• Verify current software version of the BAS manufacturers front end and PC operating system. Any needed updates shall be included in the field report and approved by JCC prior to installation/upgrade.</li> <li>• Provide two (2) copies of a full back up of the system program. One copy to remain onsite and one copy to be maintained by the local JCC staff.</li> <li>• Inspect local terminal/work station/laptop for proper operation. Clean interior cooling devices and verify operation.</li> </ul>



	<ul style="list-style-type: none"> <li>• Test and verify any UPS systems tied into the BMS work station/field devices. Please note in report if any part of the system is tied into emergency power.</li> <li>• Inspect, verify, and clean all field device enclosures. If the enclosure includes a cooling fan or filter, clean filter and verify proper operation of the cooling device.</li> <li>• Perform any preventive maintenance required to the databases and the programming.</li> <li>• Work with JCC facility management teams to repair or replace sensors and controllers when needed.</li> </ul>
<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this program. A performance-based annual review will be conducted with the contractor by the facility manager, at his/her discretion.
Maintenance Tech's:	Qualified building engineers will perform monitoring of BAS and controllers/sensors within each facility. All observations shall be recorded and provided to the contractor prior to the performance of annual maintenance.
Service Provider:	The Service Provider shall perform an annual review of BAS Sequence of Operations, make adjustments to systems programming to maintain building efficiency levels in accordance with State and Federal requirements and the stated goals of JCC, and provide maintenance and replacement services to controllers and sensors as needed.

<b>Section 5: General Requirements</b>		<i>Contractor shall supply all labor, supervision, materials, tools, equipment, testing reagents, supplies, and disposal procedures and make all necessary efforts required for treating and maintaining water conditioning. Contractor must provide all log sheets and fully functional water chemistry tracking and trending software.</i>
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	Provide qualified technicians, tools and materials necessary to perform routine preventive maintenance on the Building Automation Systems of JCC properties.	
<b>2.</b>	Prior to performing any BAS PM services, the contractor will submit the following information for review and approval: <ul style="list-style-type: none"> <li>• A tentative schedule, sample PM check sheets, and description of preventive maintenance tasks which the contractor plans to provide.</li> <li>• Certificates of calibration for each test instrument showing certified calibration within a year from date of intended use.</li> </ul>	
<b>3.</b>	Contractor shall review, in coordination with JCC staff, all the sequence of operation of the main BAS systems, with heavy focus on the HVAC and Building Pressurization. Adjustment of parameters and programming will be documented and recorded for future reference.	
<b>4.</b>	Contractor shall identify if any installed controllers or sensors need detailed and extended corrective maintenance. In that case, it must be included in the final report, listing the parts needed and quoting the parts and labor required to perform that corrective maintenance.	



# Maintenance Operations Procedure

<b>5.</b>	Produce a detailed report of the performed visit within one week (or five business days) of completion of work. Any additional work outside the scope of this PM program shall be identified in the report, listing the parts needed and quoting the parts and labor required to perform that corrective maintenance. No additional corrective action will start before a separate purchase order is fully approved and submitted to the contractor.
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<b>Section 6: Additional Tasks</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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<b>Item</b>	<b>Procedure</b>
<b>1.</b>	Upon acceptance of corrective maintenance cost estimates of BAS components, the Contractor shall assist with repair and replacement of faulty components and ensure programming of the BAS is properly adjusted, as needed.
<b>2.</b>	The Contractor is responsible for bringing all needed tools, including laptops, software, and any specialized equipment to the Work site.
<b>3.</b>	The Contractor is responsible for the safety of for his/her employees, and for conduct of the work in a manner that prioritizes the safety of JCC staff and visitors.

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work.</i>
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Final Report	The service provider shall produce a detailed report of the performed visit within one week (or five business days) of completion of work. Additional work outside the scope of this PM program shall be identified in the report, listing the parts needed and quoting the parts and labor required to perform that corrective maintenance.
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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>E6 Transformer (Dry-Type) Quarterly PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2018	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Quarterly	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:
Street Address:		City:	State: Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:
	Electrical Closets/Mechanical Rooms.		Electrical
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
Electrical and Lighting	Power Transformers	Power Dry Step Down Transformers	23-35 13 17 17 11
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			E6-Q
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the transformers installed throughout the building.
Responsibilities:	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impact to electrical systems unless a failure is discovered or occurs during the course of the procedure.
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Arc flash PPE should be available when conducting this procedure. A safety partner is recommended.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Proper planning and notification procedures will be followed to ensure safety of technician. Transformer cover will not be opened during the course of this PM procedure.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.





# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access. Ensure no obstacles are placed within 36 inches of transformer.			
2.	Communicate start time to facility manager.			
3.	Verify transformer name, location and id. Placarding should include "fed from" and "area fed" information. Add or update, if necessary.			
4.	Clean the transformer as follows: <ul style="list-style-type: none"> <li>• Use a HEPA style vacuum to remove exterior dust on transformer.</li> <li>• With a non-static, non-lint cloth, and using only nonflammable solvent, wipe the exterior of the transformer down</li> </ul>			
5.	Verify there are no combustible materials stored in the room or immediate area around the transformer.			
6.	Listen for any abnormal sounds vibrations or smells. If noted, create a follow-up work order.			
7.	Communicate completion time to facility manager and CMMS Administrator.			



<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Ap- proval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E6 Transformer (Dry-Type) Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>	
<i>Street Address:</i>		<i>City:</i>	<i>State:</i>	<i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>	
	Electrical Closets/Mechanical Rooms.		Electrical	
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>	
Electrical and Lighting	Power Transformers	Power Dry Step Down Transformers	23-35 13 17 17 11	
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>	
			E6-A	
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>				
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>	

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the transformers installed throughout the building.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impacts to electrical systems during conduct of this procedure.
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of arc flash PPE is required during this procedure. A safety partner is recommended for this procedure.



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes. Use of an IR scanner is necessary.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping		Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Contingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Electrical hazards pose serious risks to technicians.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: These procedures should be conducted with a safety partner, and appropriate arc flash PPE will be worn.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access. Ensure no obstacles are placed within 36 inches of transformer.			
2.	Communicate start time to facility manager.			
3.	Verify transformer name, location and id. Placarding should include "fed from" and "area fed" information. Add or update, if necessary.			
4.	Clean the transformer as follows: <ul style="list-style-type: none"> <li>• Use a HEPA style vacuum to remove exterior dust on transformer.</li> <li>• With a non-static, non-lint cloth, and using only nonflammable solvent, wipe the exterior of the transformer down</li> </ul>			
5.	Verify there are no combustible materials stored in the room or immediate area around the transformer.			
6.	Listen for any abnormal sounds vibrations or smells. If noted, create a follow-up work order.			
7.	Don appropriate arc flash PPE based on arc flash assessment of transformer.			
8.	Remove top of transformer and look for discoloring or anything out of the ordinary.			
9.	With an IR scanner, look for any hot spots on the areas that can be seen through open cover.			
10.	If findings require follow-up, create and submit a new work order.			
11.	Communicate completion time to facility manager and CMMS Administrator.			



<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Ap- proval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E7 Uninterruptible Power Supply (UPS) Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>	
<i>Street Address:</i>		<i>City:</i>	<i>State:</i>	<i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>	
			Electrical	
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>	
Electrical and Lighting	Power Conditioning Equipment	Uninterrupted Power Supply (UPS) Units	23-35 23 21 13	
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>	
			E7-A	
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>				
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>	

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the UPS units installed in the facility.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There is a risk of electrical system disruption to those components connected to the UPS system.
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use of arc flash PPE is required during this procedure.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes, as well as a temp gun and IR scanner.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Work involves energized equipment and batteries.	
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
		Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Electrical hazards pose serious risks to technicians.  Risk 2: When exercising the conditions of the UPS system, it is possible that electrical service to attached components will be interrupted.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Appropriate arc flash PPE will be worn.  Contingency Plan 2: This procedure may need to be performed when components attached to the UPS are not in use (e.g., after normal business hours).
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Perform a visual inspection of the unit for evidence of damage.			
4.	Clean the unit as follows: <ul style="list-style-type: none"> <li>• Use a HEPA style vacuum to remove exterior dust on unit.</li> <li>• With a non-static, non-lint cloth, and using only nonflammable solvent, wipe down the exterior of the unit.</li> </ul>			
5.	Using a temp gun, scan the outside of the unit for hot spots.			
6.	Access the unit display: <ul style="list-style-type: none"> <li>• Check for active alarms.</li> <li>• Check the event history to review any previous alarms that have been cleared since the last annual PM.</li> <li>• Verify current firmware is installed. If necessary, Connect a computer and upgrade.</li> <li>• Check and record the input voltage and current, output load power, battery voltage and current.</li> </ul>			
7.	Don arc flash PPE based on the units arc flash rating and access the areas that have connections for input voltage and output voltage for both the house power and battery power. Inspect the capacitors and look for bulging or damaged elements.			
8.	Using a multimeter, check and record input voltage and current, output power load, battery voltage and current. Compare to the display readings recorded earlier and note any discrepancies.			



<b>9.</b>	Perform an IR scan of these same connections and note any abnormal heat readings for further investigation. Create a follow-up work order, if needed.			
<b>10.</b>	Visually inspect batteries and battery connections. Look for mis-colored or misaligned connections, and leaks or bulges on batteries.			
<b>11.</b>	Perform a check of each battery by blocking the impedance and voltage, conducting secure discharge test, and checking the string voltage and current.			
<b>12.</b>	Exercise all conditions of the UPS to verify operation, including putting the system in manual bypass.			
<b>13.</b>	If findings require follow-up, create and submit a new work order.			
<b>14.</b>	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>E8 Lighting &amp; Controls (Interior/Exterior) Monthly PM Procedures</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	2/15/2020	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			E8-A

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of the Lighting and Controls Monthly PM Program is to maintain interior and exterior lighting and controls systems to ensure the safety of JCC personnel and visitors, and to maintain system efficiency in accordance with JCC standards and applicable State and Federal requirements.
<i>Scope:</i>	The service provider shall be knowledgeable of the lighting and controls system installed in the subject facility. Lighting and controls are to be maintained in a manner that meets the standards for efficiency set by JCC in accordance with State and Federal requirements, and to ensure the interior and exterior environments meet the performance objectives of the facility.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this program. A performance-based annual review will be conducted with the contractor by the facility manager, at his/her discretion.



Maintenance Tech's:	Qualified building technicians will perform monitoring of lighting and and controllers/sensors within each facility. All observations shall be recorded and provided to the contractor prior to the performance of monthly maintenance.
Service Provider:	The Service Provider shall perform a monthly review of controls systems, and perform maintenance on lighting systems installed in the subject facility. Recommendations for controls and lighting systems replacement or upgrades shall be made when the systems can no longer meet established goals and standards.

<b>Section 5: General Requirements</b>		<i>Contractor shall supply all labor, supervision, materials, tools, equipment, testing reagents, supplies, and disposal procedures and make all necessary efforts required for treating and maintaining water conditioning. Contractor must provide all log sheets and fully functional water chemistry tracking and trending software.</i>
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	Provide qualified technicians, tools and materials necessary to perform routine preventive maintenance on the Lighting and Controls Systems of JCC properties.	
<b>2.</b>	Prior to performing any PM services, the contractor will submit a tentative schedule, sample PM check sheets, and description of preventive maintenance tasks which the contractor plans to provide for review and approval by JCC.	
<b>3.</b>	Contractor shall review, in coordination with JCC staff, fixture and lighting controls schedules, and provide suggestions and cost estimates for improvements and upgrades. Adjustment of parameters and programming will be documented and recorded for future reference.	
<b>4.</b>	Contractor shall provide fixture cleaning and lamp/ballast replacement as detailed on the approved schedule.	
<b>5.</b>	Contractor shall review interior and exterior lighting schedules during each visit. Any adjustments made shall be documented and reviewed with the facility manager.	
<b>6.</b>	Contractor shall identify if any installed controllers or sensors need corrective maintenance or replacement. In that case, it must be included in the monthly report, listing the parts needed and quoting the parts and labor required to perform that corrective maintenance or replacement.	
<b>7.</b>	Produce a monthly report of the performed visit within one week (or five business days) of completion of work. Any additional work outside the scope of this PM program shall be identified in the report, listing the parts needed and quoting the parts and labor required to perform that corrective maintenance. No additional corrective action will start before a separate purchase order is fully approved and submitted to the contractor.	

<b>Section 6: Additional Tasks</b>		<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
<b>Item</b>	<b>Procedure</b>	
<b>1.</b>	Upon acceptance of corrective maintenance cost estimates of lighting and controls components, the Contractor shall assist with repair and replacement of faulty components and ensure programming of the controls system is properly adjusted, as needed.	
<b>2.</b>	The Contractor is responsible for bringing all needed tools, including laptops, software, and any specialized equipment to the work site.	





## Maintenance Operations Procedure

- |           |   |
|-----------|---|
| <b>3.</b> | The Contractor is responsible for the safety of for his/her employees, and for conduct of the work in a manner that prioritizes the safety of JCC staff and visitors. |
|-----------|---|

<b>Section 6: Supporting Documenta- tion</b>	<i>Identify all documents required to support successful completion of this work.</i>
Final Report	The service provider shall produce a detailed report of the performed visit within one week (or five business days) of completion of work. Additional work outside the scope of this PM program shall be identified in the report, listing the parts needed and quoting the parts and labor required to perform that corrective maintenance.



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# Maintenance Operations Procedure

**For electrical systems not covered under the E1 through E8 designations, the contractor must complete the following form for each such system and for each PM frequency.**

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>E9 Unique Electrical System PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
Procedure Frequency:		Level of Risk:	

<b>Section 2: Site Information</b>	Facility Name:	Work Order Number:
Street Address:	City:	State: Zip:

<b>Section 3: Procedure Overview</b>	Work Area:	Affected Systems:	
		Electrical	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			E9
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the asset.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>					
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> Define specific impact to affected equipment or systems; lockout/tag out requirements.	
Electrical Utility Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Emergency Generator System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Heating/Cooling System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ventilation System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Uninterruptible Power Supply System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Power Distribution System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fire Detection Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fire Suppression System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Monitoring System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Control System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Security System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
General Power and Lighting System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lockout/Tag Out Required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<i>Provide any additional relevant detail not covered above:</i>					



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at:

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input type="checkbox"/> Other (describe):		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Electrical	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Hand & Power Tools	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Fall Protection	<input type="checkbox"/> Yes <input type="checkbox"/> No	



	Hot Work	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Other	<input type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1:  Risk 2:
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1:  Contingency Plan 2:
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.				




<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>L1 Life Safety Systems Quarterly PM Program</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			L1-Q

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of Life Safety Systems Maintenance Program is to ensure that life safety systems are maintained and tested in accordance with Federal and State requirements, and that all appropriate certifications are maintained.
<i>Scope:</i>	The scope of work for the Life Safety Systems Maintenance Program includes all components of the fire alarm and suppression system including, but not limited to: Fire control panels, fire pumps (diesel and electric), fire water storage tanks, vent hoods, fire doors and curtains, air system tanks, strobe and warning devices, detection systems (smoke, heat and CO2), standpipe, fire department connection, fire extinguishers, fire hoses and similar.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this program.
<i>Maintenance Tech's:</i>	Qualified building engineers will perform regular inspections of Fire/Life Safety Systems and report any problems to the facility manager for resolution.



Service Provider:	The Service Provider shall provide and/or procure qualified personnel to conduct all inspection and certification work associated with this program.
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<b>Section 5: General Requirements</b>	<i>The Service Provider shall provide all contracting services and supervision in the performance of this program. For self-performed work, the service provider will supply all labor, materials, tools, and equipment.</i>
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<b>Item</b>	<b>Requirement</b>
1.	The service provider is responsible for conducting and/or contracting all required inspections and checks/tests. All checks and tests must be documented and maintained at the building for which testing is conducted.
2.	A quarterly visual inspection of FLS components is to be conducted, and any deficiencies (faults, leaks or damage) are to be brought to the attention of the facility manager.
3.	On a quarterly basis, all fire pumps and associated air compressors for dry systems must be tested. Results shall be documented and maintained by the facility manager and the service provider.

<b>Section 6: Additional Requirements</b>	<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
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<b>Item</b>	<b>Requirement</b>
1.	A service schedule shall be proposed and approved by the JCC prior to implementation.

<b>Section 7: Cost Basis</b>	
Fire/Life Safety Systems	TBD.



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>L1 Life Safety Systems Annual PM Program</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			L1-A

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of Life Safety Systems Maintenance Program is to ensure that life safety systems are maintained and tested in accordance with Federal and State requirements, and that all appropriate certifications are maintained.
<i>Scope:</i>	The scope of work for the Life Safety Systems Maintenance Program includes all components of the fire alarm and suppression system including, but not limited to: Fire control panels, fire pumps (diesel and electric), fire water storage tanks, vent hoods, fire doors and curtains, air system tanks, strobe and warning devices, detection systems (smoke, heat and CO2), standpipe, fire department connection, fire extinguishers, fire hoses and similar.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this program.
<i>Maintenance Tech's:</i>	Qualified building engineers will perform regular inspections of Fire/Life Safety Systems and report any problems to the facility manager for resolution.



Service Provider:	The Service Provider shall provide and/or procure qualified personnel to conduct all inspection and certification work associated with this program.
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<b>Section 5: General Requirements</b>		<i>The Service Provider shall provide all contracting services and supervision in the performance of this program. For self-performed work, the service provider will supply all labor, materials, tools, and equipment.</i>
<b>Item</b>	<b>Requirement</b>	
1.	The service provider is responsible for conducting and/or contracting all required inspections and checks/tests. All checks and tests must be documented and maintained at the building for which testing is conducted.	
2.	A quarterly visual inspection of FLS components is to be conducted, and any deficiencies (faults, leaks or damage) are to be brought to the attention of the facility manager.	
3.	On a quarterly basis, all fire pumps and associated air compressors for dry systems must be tested. Results shall be documented and maintained by the facility manager and the service provider.	
4.	An annual inspection of the Fire Panel/Command Center and Horn/ Strobe system as a whole must be performed by a licensed technician in the State of California. All documentation associated with this annual inspection and test must be filed with the appropriate authorities to maintain certification of the FLS systems.	

<b>Section 6: Additional Requirements</b>		<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
<b>Item</b>	<b>Requirement</b>	
1.	A service schedule shall be proposed and approved by the JCC prior to implementation.	
2.	Regulatory five year inspection to be performed at the time of the annual as a work order scope change.	

<b>Section 7: Cost Basis</b>	
Fire/Life Safety Systems	TBD.



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>L2 Reduced Pressure Backflow Preventer Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
General Facility Services Products	Valves	Backflow Preventors	23-27 31 11
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>Equipment ID:</i>
			L2-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>Facility MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the asset.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.

Reduced Pressure Backflow Preventer Annual PM Procedures



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Hand & Power Tools	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There should be no impact to the facility water during this PM procedure.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Not required.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Critical Facility Work Rules. Notify Leadership before any change is made.





# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
<b>General Maintenance</b>				
3.	Clean all parts thoroughly with water after disassembly.			
4.	Carefully inspect rubber seal rings, diaphragms and o-rings for damage.			
<b>Servicing Check Valves</b>				
5.	Close inlet and outlet shut-off valves.			
6.	Open test cocks to release pressure from valve.			
7.	Unscrew check valve covers using appropriate size wrench.  <i>CAUTION: Cover is spring loaded.</i>  To avoid injury, hold cover down firmly with one hand while unscrewing.			
8.	Remove check valve cover, spring and poppet assembly.			
9.	Inspect the rubber seal ring for cuts or embedded debris. To remove seal ring, remove screw and seal ring retainer. If the reverse side of the seal ring is unused, it is possible to invert the seal ring. This would be considered a temporary solution to fixing a fouled check and should be replaced with a new seal ring as soon as possible.			
10.	Inspect valve cavity and seating area. Remove any debris.			
11.	If installed with removable seat, unscrew seat from body and replace with new seat and lightly grease o-ring.			



<b>12.</b>	Reverse the above procedures to reinstall check valve assembly.			
<b>Servicing Relief Valve</b>				
<b>13.</b>	Remove relief valve cover bolts and cover. Gently pull on diaphragm to remove the cartridge assembly.			
<b>14.</b>	Inspect seal ring for cuts and embedded debris. Turn over or replace if required.			
<b>15.</b>	Disassemble cartridge by unscrewing relief valve retaining screw.			
<b>16.</b>	Inspect diaphragm and o-rings for damage. Replace required parts and apply a light coat of grease to plunger o-ring.			
<b>17.</b>	Carefully reassemble cartridge assembly.			
<b>18.</b>	Inspect relief valve seat for wear on seating surface. If damaged, replace seat and seat o-ring. For seat removal assistance, consult factory.			
<b>19.</b>	Insert cartridge assembly into relief valve body.			
<b>20.</b>	Replace relief valve cover and cover bolts.			
<b>21.</b>	Place device in service and test per "TESTING PROCEDURES" as described in the O&M manual.			
<b>22.</b>	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P1 Boiler (Condensing) Monthly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC	Commercial Boilers	Condensing Boilers	23-33 11 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P1-M
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the boiler. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There should be no impact to the facility during this monthly PM procedure.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Document- ation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	



	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.	
	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> (Check all that apply)			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the chiller.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Test low water level cut-off.			
5.	Test the manual reset high-temp limit.			
6.	Test the low gas pressure switch.			
7.	Test operating temperature controls by reducing or increasing temperature setting as necessary to check burner operation.			
8.	Check the condensate drain system. Clean and flush as necessary.			
9.	For steam systems, inspect and clean all steam traps, condensate pumps and drains. Ensure condensate pump/motor bearings are greased in accordance with manufacturer recommendations. Create a repair work order if problems or deficiencies are discovered.			



<b>10.</b>	Observe the pump in operation. Record observations and document any abnormalities in operation, unusual vibration or noise. <ul style="list-style-type: none"> <li>• If leakage rate increases beyond manufacturer limits, the mechanical seal must be replaced.</li> <li>• Verify pump is operating within the permitted characteristic curve range (as per manufacturer recommendations)</li> <li>• If noise level increases due to motor mounting or increased vibration, the motor or motor mount may need to be replaced.</li> </ul> Clean exterior of pump with a damp cloth. Do not use detergents.			
<b>11.</b>	Keep the appliance area clear and free from combustible materials, gasoline, and other flammable vapors and liquids.			
<b>12.</b>	Clean unit using appropriate methods (vacuum, wipe-down, etc.).			
<b>13.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>14.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P1 Boiler (Condensing) Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC	Commercial Boilers	Condensing Boilers	23-33 11 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P1-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, ensure efficient operations, comply with environmental regulations, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the boiler. This includes inspection, adjustment of controls to provide efficient operation, and measurement and recording of unit operating parameters for proper trend analysis.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>					
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> Define specific impact to affected equipment or systems; lockout/tag out requirements.	
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There will be reduced heating capacity while the boiler is off line.	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO is necessary to shut down boiler during this procedure.	
<i>Provide any additional relevant detail not covered above:</i>					



# Maintenance Operations Procedure

<b>Section 6: Supporting Document- ation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use appropriate arc flash PPE when working around electrical connections.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the boiler.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Verify flame measurement is within manufacturer recommendations.			
5.	Test low water level cut-off.			
6.	Test the manual reset high-temp limit.			
7.	Test the low gas pressure switch.			
8.	Test operating temperature controls by reducing or increasing temperature setting as necessary to check burner operation.			
9.	Shut down unit and LO/TO both the gas supply and electrical supply.			
10.	Open front cover and clean burner of any accumulated dust or lint.			
11.	Inspect burner for any signs of deterioration or corrosion. Replace immediately if deterioration or corrosion is evident.			
12.	Check the condensate drain system. Clean and flush as necessary.			
13.	For steam systems, inspect and clean all steam traps, condensate pumps and drains. Ensure condensate pump/motor bearings are greased in accordance with manufacturer recommendations. Create a repair work order if problems or deficiencies are discovered.			



<b>14.</b>	Check the pH level of the system fluid. Verify the pH is within a range of 6.5 to 8.5.			
<b>15.</b>	Inspect and clean the condensate system and check for leaks. If a condensate neutralization kit is present, open the lid and inspect the limestone rocks. If they are absent or have been significantly worn away, replace them with new limestone rocks. Use high-calcium (or pure) limestone.			
<b>16.</b>	Close unit, remove LO/TO devices and restore to normal operation.			
<b>17.</b>	<p>Observe the pump in operation. Record observations and document any abnormalities in operation, unusual vibration or noise.</p> <ul style="list-style-type: none"> <li>• If leakage rate increases beyond manufacturer limits, the mechanical seal must be replaced.</li> <li>• Verify pump is operating within the permitted characteristic curve range (as per manufacturer recommendations)</li> <li>• If noise level increases due to motor mounting or increased vibration, the motor or motor mount may need to be replaced.</li> </ul> <p>Clean exterior of pump with a damp cloth. Do not use detergents.</p>			
<b>18.</b>	Clean unit exterior using appropriate methods (vacuum, wipe-down, etc.).			
<b>19.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>20.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P1 Boiler (Condensing) Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC	Commercial Boilers	Condensing Boilers	23-33 11 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P1-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, ensure efficient operations, comply with environmental regulations, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the boiler. This includes inspection, adjustment of controls to provide efficient operation, and measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	



Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There will be reduced heating capacity while the boiler is off line.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO is necessary to shut down boiler during this procedure.
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use appropriate arc flash PPE when working around electrical connections.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the boiler.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access. Ensure all tools and replacement parts are available prior to starting this PM procedure.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	Verify flame measurement is within manufacturer recommendations.			
5.	Test low water level cut-off.			
6.	Test the manual reset high-temp limit.			
7.	Test the low gas pressure switch.			
8.	Test operating temperature controls by reducing or increasing temperature setting as necessary to check burner operation.			
9.	Shut down unit and LO/TO both the gas supply and electrical supply.			
10.	Check burner and clean off any soot or foreign material that may have accumulated. Check for corrosion of the burner and its parts. If there is evidence of deterioration or corrosion, replace immediately. Inspect combustion chamber when the burner is removed for inspection. Note any signs of deterioration. Clean as necessary.			



<p><b>11.</b></p>	<p>Inspect and clean heat exchanger. Remove the various covers to inspect the flue gas passageways. Clean the combustion side casting pins by flushing with clean water and blowing dry with compressed air. Do not use any cleaning agents or solvents. Do not use soap. A soft nylon brush may be used in accessible areas. Be sure to inspect condensate collection pan that is the lowest part of the heat exchanger.</p>			
<p><b>12.</b></p>	<p>For models with ignition electrodes, if signal is below the minimum specified, the ignition electrode may need to be replaced. Replace the ignition electrode and gasket, if needed.</p>			
<p><b>13.</b></p>	<p>Drain and flush the water side of the heat exchanger as required (separate from system flush) using clean water only.</p>			
<p><b>14.</b></p>	<p>Inspect and clean the condensate system and check for leaks. If a condensate neutralization kit is present, open the lid and inspect the limestone rocks. If they are absent or have been significantly worn away, replace them with new limestone rocks. Use high-calcium (or pure) limestone.</p>			
<p><b>15.</b></p>	<p>Take a sample of system fluid and test/verify the water quality is in compliance with manufacturer recommendations.</p>			
<p><b>16.</b></p>	<p>Examine the venting system. Refer to the vent manufacturer's instructions for requirements in addition to those listed below.</p> <ul style="list-style-type: none"> <li>• Check all joints and pipe connections for tightness.</li> <li>• Check pipe for corrosion or deterioration. If any piping needs replacing, do so immediately.</li> <li>• Inspect and clean any screens in the vent terminal.</li> </ul>			
<p><b>17.</b></p>	<p>Thoroughly inspect the heating system and correct any problems prior to re-starting the boiler.</p>			
<p><b>18.</b></p>	<p>For Steam Systems:</p> <ul style="list-style-type: none"> <li>• Inspect and clean all steam traps, condensate pumps and drains. Ensure condensate pump/motor bearings are greased in accordance with manufacturer recommendations. Create a repair work order if problems or deficiencies are discovered.</li> <li>• All condensate pumps shall receive a full service to ensure all seals are inspected and replaced, as necessary and in accordance with manufacturer recommendations.</li> <li>• Condensate pumps require annual testing and recording of electrical connections for trending purposes.</li> </ul>			
<p><b>19.</b></p>	<p>Close unit, remove LO/TO devices and restore to normal operation.</p>			



# Maintenance Operations Procedure

<b>20.</b>	Perform emission analysis with a portable analyzer tester and compare emission results to the manufacturer's specifications and applicable air district's requirements. If emission results fail to meet manufacturer's specifications and applicable air district's requirements, readjust combustion settings (refer to O&M Manual) and retest emissions. If emission results fail to meet the applicable air district's requirements, immediately notify JCC's facility administrator or other representative of the emission results failure. If emission results meet manufacturer's specifications and applicable air district's requirements, record the emission results and upload the boiler's emission results to the Computer Aided Facility Management (CAFM) system.			
<b>21.</b>	Perform a leak test of the gas valves in accordance with the manufacturer's instructions.			
<b>22.</b>	Observe the pump in operation. Record observations and document any abnormalities in operation, unusual vibration or noise. <ul style="list-style-type: none"> <li>• If leakage rate increases beyond manufacturer limits, the mechanical seal must be replaced.</li> <li>• Verify pump is operating within the permitted characteristic curve range (as per manufacturer recommendations)</li> <li>• If noise level increases due to motor mounting or increased vibration, the motor or motor mount may need to be replaced.</li> </ul> Clean exterior of pump with a damp cloth. Do not use detergents.			
<b>23.</b>	Clean unit exterior using appropriate methods (vacuum, wipe-down, etc.).			
<b>24.</b>	Upload emission test results to the work order			
<b>25.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>26.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P2 Domestic Water Heater (Gas-Fired, Condensing) Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>	<i>City:</i>	<i>State:</i>	<i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			Domestic Water
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
Plumbing	Hot Water Heaters	Gas Instantaneous Hot Water Heaters	23-31 29 11 13
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P2-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the water heater. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.
<i>Responsibilities:</i>	

Domestic Water Heater (Gas-Fired, Condensing) Annual  
PM Procedures



Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO is necessary to shut down unit during this procedure.

*Provide any additional relevant detail not covered above:*

Domestic hot water will be reduced or unavailable (depending on redundancy of units) during the execution of this PM.





# Maintenance Operations Procedure

<b>Section 6: Supporting Document- tation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Heavy rubber gloves for scalding prevention. Nitrile gloves (disposable) for cleaning.		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use appropriate arc flash PPE when testing live electrical connections.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes. Multimeter is used for electrical measurements.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use of heavy rubber gloves will protect from scalding hazards. Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Hazards associated with this procedure include exposure to live electrical connections, scalding water, and possibility of chemical exposure when cleaning the unit.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: All safety measures must be observed when executing this PM. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Access control display and determine if there are any alarms to be addressed. Verify temperature is set properly.			
4.	Perform a visual inspection of the exterior of unit and peripheral components (circulating pumps, hot water storage tanks) looking for damage, rust, missing hardware, leaks or anything out of the ordinary.			
5.	Clean exterior of unit and peripheral components using a vacuum and/or cloth and cleaning agent. Verify model and serial numbers are correct.			
6.	Remove the cover and visually inspect unit components. Look for obvious damage, leaks, mis-colored or burnt wiring/connections, and evidence of insect or rodent infiltration.			
7.	Inspect condensate tube for blockage, algal or mold growth. Clean or replace, as necessary.			
8.	Using a multimeter, measure and record supply voltage and amperage of unit and associated circulating pump(s).			
9.	Check all gas connections for leaks. Make appropriate repairs if a leak is detected.			
10.	Remove and inspect the fresh air intake filter. Clean or replace, as needed.			



11.	<p><b>LO/TO</b></p> <ul style="list-style-type: none"> <li>• Turn off power to the unit at the controller, if installed, and apply LO/TO device.</li> <li>• Turn the unit disconnect switch to OFF, and shut off the gas supply valve. LO/TO these devices.</li> <li>• Open a hot water faucet and let it run until the water runs cold. (This removes the potential for a scalding hazard with residual hot water.)</li> <li>• Isolate the cold water supply and the hot water feed.</li> </ul>			
12.	<p>Drain the unit by removing the cap and opening the flush service valve on the hot water supply side of the unit. <b>Caution:</b> Water could be hot if it has not been run out.</p> <p>Next, remove the cap and open the cold water supply flush service valve to remove all remaining water from the unit.</p>			
13.	Remove the pre-water filter and clean or replace, as needed.			
14.	Visually inspect the burner exhaust flue to ensure there are no obstructions. Look for damage (cracks, misaligned joints) both inside and out.			
15.	Connect a water supply and drain hose to the service flush valves and flush the water coils. Use a chemical cleaner to remove scaling in accordance with manufacturer recommendations.			
16.	If chemical cleaning is used, be sure to flush with clean water to clear all chemical traces from system.			
17.	Clean the pre-water filter once again.			
18.	<p>Reinstall flush valve service caps. Slowly open the cold water supply valve and listen for the unit to fill. Trapped air should be bled from the pressure relief valve.</p> <p>Then, open the hot water supply valve. Trapped air can be bled by opening a hot water faucet in the facility.</p> <p>Verify there are no water leaks.</p>			
19.	<p><b>Return unit to service:</b></p> <ul style="list-style-type: none"> <li>• Remove the LO/TO device and open the gas supply valve.</li> <li>• Remove LO/TO device and turn the unit disconnect switch to ON.</li> <li>• Remove the LO/TO device and turn the unit controller (if installed) to ON.</li> <li>• Verify the temp is set to 125 (or as desired) and that unit powers up and operates normally.</li> </ul>			
20.	Inspect hot water storage tank for leaks. Inspection shall include shutoff and relief valves, as well as all piping from the water heater unit to the tank.			



# Maintenance Operations Procedure

<b>21.</b>	Inspect circulating pump for leaks and abnormal vibration. For units that require lubrication, lubricate pump bearings in accordance with manufacturer recommendations.			
<b>22.</b>	All findings and readings should be kept for trend monitoring. Create a follow-up W/O if additional repair is needed.			
<b>23.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:	
Craft Manager Approval	NAME:	TITLE:	DATE:	
Safety Coordinator Approval	NAME:	TITLE:	DATE:	



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>P3 Domestic Water Heater (Electric, Non-Condensing) Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2018	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:	Work Order Number:
Street Address:	City:	State: Zip:

<b>Section 3: Procedure Overview</b>	Work Area:	Affected Systems:	
		Domestic Water	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
Plumbing	Hot Water Heaters	Hot Water Tank Electric Heaters	23-31 29 13 11
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			P3-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the water heater. This includes inspection, measurement and recording of unit operating parameters for proper trend analysis.

Domestic Water Heater (Electric, Non-Condensing)  
Annual PM Procedures



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO is necessary to shut down the unit during this procedure.

*Provide any additional relevant detail not covered above:*

Domestic hot water will be reduced or unavailable (depending on redundancy of units) during the execution of this PM, and until water can be heated once unit is restored to service.





# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Heavy rubber gloves for scalding prevention. Nitrile gloves (disposable) for cleaning.		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use appropriate arc flash PPE when testing live electrical connections.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.

Domestic Water Heater (Electric, Non-Condensing)  
Annual PM Procedures



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use of heavy rubber gloves will protect from scalding hazards. Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: Hazards associated with this procedure include exposure to live electrical connections, scalding water, and possibility of chemical exposure when cleaning the unit.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: All safety measures must be observed when executing this PM. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Perform a visual inspection of the exterior of tank looking for damage, rust, missing hardware, leaks or anything out of the ordinary.			
4.	Inspect dielectric unions and piping for corrosion or leaks.			
5.	If needed, ensure the unit has double containment with a drain pipe to a drain.			
6.	While unit is operating: <ul style="list-style-type: none"> <li>• Remove electric terminal cover and inspect connections. Using a multimeter, measure and record the voltage prior to the fuse to the element.</li> <li>• Using a multimeter, measure and record supply voltage and amperage of unit and associated circulating pump(s).</li> <li>• Check the pressure relief valve to make sure it operates properly.</li> <li>• Visually inspect circulation pump(s) to verify operation. If necessary, carefully touch the pump(s) – pump(s) will be hot – to feel vibration that indicates water is flowing.</li> </ul>			
7.	<b>LO/TO</b> <ul style="list-style-type: none"> <li>• Turn off breaker(s) to circulation pump(s) and LO/TO. Verify pump(s) is/are off by checking for vibration as described above.</li> <li>• Turn off breaker to water heater and LO/TO. Verify no power to unit using a volt meter.</li> <li>• Shut off supply water and LO/TO.</li> <li>• Shut off discharge water from unit and LO/TO.</li> </ul>			

Domestic Water Heater (Electric, Non-Condensing)  
Annual PM Procedures



<b>8.</b>	Drain the unit. Exercise caution as water will be hot, and ensure the drain can handle the amount of water being drained.			
<b>9.</b>	As unit drains, watch for sediment in the drain water to give clues as to condition of tank interior. The pressure relief valve may be opened to speed the draining process.			
<b>10.</b>	Using a multimeter, test and record all fuses.			
<b>11.</b>	Check the setpoint of the water heater to make sure that it is set at 125 degrees F.			
<b>12.</b>	Remove electrical connections to the element. Measure and record the ohms and compare with manufacturer ohm range.			
<b>13.</b>	<p><b>Return unit to service:</b></p> <ul style="list-style-type: none"> <li>• Reconnect electrical wires to element.</li> <li>• Remove LO/TO and close the drain valve.</li> <li>• Remove LO/TO and open cold water supply valve to water heater. Leave the pressure relief valve open until water is coming out, then close the pressure relief valve.</li> <li>• Once tank is full, remove LO/TO and return breakers to the ON position. With a multimeter, check and record voltage and amperage at the element and ensure it is within manufacturer-specified ranges.</li> </ul>			
<b>14.</b>	Reinstall electrical cover plate.			
<b>15.</b>	Clean unit exterior water heater, hot water storage tank, and circulating pump (as applicable to system) using appropriate methods (vacuum, wipe-down, etc.).			
<b>16.</b>	Inspect hot water storage tank for leaks. Inspection shall include shutoff and relief valves, as well as all piping from the water heater unit to the tank.			
<b>17.</b>	Inspect circulating pump for leaks and abnormal vibration. For units that require lubrication, lubricate pump bearings in accordance with manufacturer recommendations.			
<b>18.</b>	All findings and readings should be kept for trend monitoring. Create a follow-up W/O if additional repair is needed.			
<b>19.</b>	Communicate completion time to facility manager and CMMS administrator.			



# Maintenance Operations Procedure

<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P4 Boiler (Steam, Low Pressure) Quarterly PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	2/15/2020	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Commercial Boilers	Fire Tube Boilers	23-33 11 15
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P4-Q
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, ensure efficient operations, comply with environmental regulations, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the boiler. This includes inspection, adjustment of controls to provide efficient operation, and measurement and recording of unit operating parameters for proper trend analysis.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.</b>
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There will be reduced heating capacity while the boiler is off line.
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO is necessary to shut down boiler during this procedure.
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use appropriate arc flash PPE when working around electrical connections.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the boiler.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access. Ensure all tools and replacement parts are available prior to starting this PM procedure.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	<b>Check Safety Valve:</b> To do this, fasten wire or cord to the lever of the valve and pull the lever standing a safe distance away from the valve.			
5.	Follow manufacturer procedures to shut down boiler and allow unit to cool. Apply LO/TO to both the gas supply and electrical supply.			
6.	Once boiler has cooled and drained, clean the ventilation system. Check for: <ul style="list-style-type: none"> <li>• Obstructions.</li> <li>• Accumulations of soot. Remove with brush and vacuum.</li> <li>• Deterioration of vent pipe or vent accessories due to condensation or other reasons. Replace as necessary.</li> <li>• Proper support no sags, particularly in horizontal runs.</li> <li>• Tightness of joints. Reseal, as necessary.</li> </ul>			
7.	Inspect and clean all steam traps, condensate pumps and drains. Ensure condensate pump/motor bearings are greased in accordance with manufacturer recommendations. Create a repair work order if problems or deficiencies are discovered.			
8.	Clean unit exterior using appropriate methods (vacuum, wipe-down, etc.).			
9.	Remove LO/TO devices and refill/return unit to service.			



<p><b>10.</b></p>	<p><b>Check Burner and Controls:</b></p> <ul style="list-style-type: none"> <li>• Check Operating Control: Raise and lower operating control setting as required to start and stop burner.</li> <li>• Warning Check High Limit Control: Jumper operating control terminals. Allow Burner to operate until shut down by limit.</li> <li>• Check Low Water Cut-Off Control with water level at normal waterline. Raise operating control setting to allow burner to operate. Open boiler drain to allow water level to drop until burner operation is shut down by low water cutoff.</li> <li>• Check Operating Control on boiler equipped with a tankless heater. With burner off, draw hot water until burner starts, then turn off hot water and check burner shut down.</li> </ul>			
<p><b>11.</b></p>	<p>Make PH or alkalinity test by drawing a small sample of boiler water and testing with hydrion paper.</p>			
<p><b>12.</b></p>	<p>Create a follow-up work order for any additional work that needs to be accomplished on the unit.</p>			
<p><b>13.</b></p>	<p>Communicate completion time to facility manager and CMMS administrator.</p>			

<p><b>Section 11: Procedure Approval</b></p>		<p><i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i></p>		
<p>Dry Run Performed (Physical Walkthrough)</p>	<p>DATE:</p>	<p>TIME:</p>		
<p>Facility Manager Approval</p>	<p>NAME:</p>	<p>TITLE:</p>	<p>DATE:</p>	
<p>Craft Manager Approval</p>	<p>NAME:</p>	<p>TITLE:</p>	<p>DATE:</p>	
<p>Safety Coordinator Approval</p>	<p>NAME:</p>	<p>TITLE:</p>	<p>DATE:</p>	



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P4 Boiler (Steam, Low Pressure) Annual PM Procedures</b>		
<i>Procedure Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	2/15/2020	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
			HVAC
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
HVAC Specific Products and Equipment	Commercial Boilers	Fire Tube Boilers	23-33 11 15
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P4-A
<i>Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.</i>			
<i>JCC MX Personnel:</i>	<i>Contractor #1:</i>	<i>Contractor #2:</i>	<i>Affected Occupants:</i>

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	To prevent asset degradation and failures of affected systems, ensure efficient operations, comply with environmental regulations, and to maintain warranty effectivity when applicable.
<i>Scope:</i>	Performance of manufacturer recommended preventative maintenance procedures for the boiler. This includes inspection, adjustment of controls to provide efficient operation, and measurement and recording of unit operating parameters for proper trend analysis.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5: Facility Impacts</b>					
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> Define specific impact to affected equipment or systems; lockout/tag out requirements.	
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Heating/Cooling System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There will be reduced heating capacity while the boiler is off line.	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LO/TO is necessary to shut down boiler during this procedure.	
<i>Provide any additional relevant detail not covered above:</i>					



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [TBD].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Nitrile gloves (disposable).		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use appropriate arc flash PPE when working around electrical connections.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) -----

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There is a risk of chemical exposure when cleaning the boiler.  Risk 2: Failure or removal from service of the unit due to malfunction or degradation of components or systems.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Use nitrile gloves to provide protection from chemical exposure while cleaning. Review SDS of chemical cleaning agents.  Contingency Plan 2: Most maintenance parts may be obtained within 24-48 hours. Facility manager will provide interim measures while unit is down.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.





# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access. Ensure all tools and replacement parts are available prior to starting this PM procedure.			
2.	Communicate start time to facility manager.			
3.	Review the operation of the unit on the BMS and make sure that all points are active and working. Document findings to be verified when at unit.			
4.	<b>Check Safety Valve:</b> To do this, fasten wire or cord to the lever of the valve and pull the lever standing a safe distance away from the valve.			
5.	Follow manufacturer procedures to shut down boiler and allow unit to cool. Apply LO/TO to both the gas supply and electrical supply.			
6.	Once boiler has cooled and drained, clean the ventilation system. Check for: <ul style="list-style-type: none"> <li>• Obstructions.</li> <li>• Accumulations of soot. Remove with brush and vacuum.</li> <li>• Deterioration of vent pipe or vent accessories due to condensation or other reasons. Replace as necessary.</li> <li>• Proper support no sags, particularly in horizontal runs.</li> <li>• Tightness of joints. Reseal, as necessary.</li> </ul>			
7.	Clean boiler heating surfaces thoroughly. Access to boiler firetubes may be gained by removing the front and rear smokeboxes or smokebox doors. Where applicable, remove the turbulators, paying close attention to which tubes have turbulators.			



8.	<p><b>Probe Type Low Water Cut Off (as installed):</b> Physically remove the probe from the boiler tapping and inspect it for accumulation of scale or sediment. Light deposits may be removed by wiping the probe with a damp cloth. Wiping the probe with a cloth soaked in vinegar will remove more tenacious lime deposits. The most stubborn deposits may be removed from the probe by using diluted amount (3 part of water to 1 part) of phosphoric acid (H<sub>2</sub>PO<sub>4</sub>).</p>			
9.	<p>Low water cutoffs and water feeders should be dismantled to ensure freedom from obstructions and proper functioning of the working parts. Inspect connecting lines to boiler for accumulation of mud, scale, etc., and clean as required. Examine all visible wiring for brittle or worn insulation and make sure electrical contacts are clean and that they function properly. Give special attention to solder joints on bellows and float when this type of control is used. Check the float for evidence of collapse and check mercury bulb (where applicable) for mercury separation or discoloration.</p>			
10.	<p>Lubricate boiler components according to manufacturer's instructions. Generally, this involves burner and circulator.</p>			
11.	<p>Inspect and clean all steam traps, condensate pumps and drains. Ensure condensate pump/motor bearings are greased in accordance with manufacturer recommendations. Create a repair work order if problems or deficiencies are discovered.</p>			
12.	<p><b>Condensate Pumps:</b></p> <ul style="list-style-type: none"> <li>• All condensate pumps shall receive a full service to ensure all seals are inspected and replaced, as necessary and in accordance with manufacturer recommendations.</li> <li>• Condensate pumps require annual testing and recording of electrical connections for trending purposes.</li> </ul>			
13.	<p>Clean unit exterior using appropriate methods (vacuum, wipe-down, etc.).</p>			
14.	<p>Remove LO/TO devices and refill/return unit to service.</p>			
15.	<p><b>Check Burner and Controls:</b></p> <ul style="list-style-type: none"> <li>• Check Operating Control: Raise and lower operating control setting as required to start and stop burner.</li> <li>• Warning Check High Limit Control: Jumper operating control terminals. Allow Burner to operate until shut down by limit.</li> <li>• Check Low Water Cut-Off Control with water level at normal waterline. Raise operating control setting to allow burner to operate. Open boiler drain to allow water level to drop until burner operation is shut down by low water cutoff.</li> <li>• Check Operating Control on boiler equipped with a tankless heater. With burner off, draw hot water until burner starts, then turn off hot water and check burner shut down.</li> </ul>			



# Maintenance Operations Procedure

<b>16.</b>	Make PH or alkalinity test by drawing a small sample of boiler water and testing with hydrion paper			
<b>17.</b>	Perform emission analysis with a portable analyzer tester and compare emission results to the manufacturer's specifications and applicable air district's requirements. If emission results fail to meet manufacturer's specifications and applicable air district's requirements, readjust combustion settings (refer to O&M Manual) and retest emissions. If emission results fail to meet the applicable air district's requirements, immediately notify JCC's facility administrator or other representative of the emission results failure. If emission results meet manufacturer's specifications and applicable air district's requirements, record the emission results and upload the boiler's emission results to the Computer Aided Facility Management (CAFM) system.			
<b>18.</b>	Upload emission test results to the work order			
<b>19.</b>	Create a follow-up work order for any additional work that needs to be accomplished on the unit.			
<b>20.</b>	Communicate completion time to facility manager and CMMS administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P5 Steam System Maintenance Monthly PM Procedures</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P5-M

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of Steam System Maintenance Program is to ensure that facilities equipped with steam systems are properly maintained to ensure the safety and efficiency of steam utilities.
<i>Scope:</i>	This program shall cover all maintainable assets used in the piping and control of steam services. It includes, but is not necessarily limited to, steam traps, condensate pumps and drains.
<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this program.
Maintenance Tech's:	Qualified building engineers will perform monthly inspections and annual maintenance of steam system components, and generate repair orders when problems are detected.
Service Provider:	The Service Provider shall propose service schedules prior to implementation. The JCC shall review all service schedules.



<b>Section 5: General Requirements</b>		<i>The Service Provider shall provide all supervision, labor, materials, tools, and equipment in the performance of this program. The following sections demonstrate examples of common tasks with relative standards for their performance. The sections are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations for steam systems.</i>
<b>Item</b>	<b>Requirement</b>	
1.	A monthly inspection of all steam traps, condensate pumps and drains will be conducted. The service provider must note the condition of all such components, and create repair work orders for any issues discovered in the course of routine inspection.	

<b>Section 6: Additional Requirements</b>		<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
<b>Item</b>	<b>Requirement</b>	
1.	<b>Service Schedule</b>  Services will be performed by the Contractor during regular hours of operation in the various buildings, except when special conditions require servicing to be done when a building or area is vacated after regular working hours or on weekends. A service schedule shall be proposed and approved by the JCC prior to implementation.	

<b>Section 7: Cost Basis</b>		
Steam Systems	TBD.	



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P5 Steam System Maintenance Quarterly PM Procedures</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Quarterly	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P5-Q

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of Steam System Maintenance Program is to ensure that facilities equipped with steam systems are properly maintained to ensure the safety and efficiency of steam utilities.
<i>Scope:</i>	This program shall cover all maintainable assets used in the piping and control of steam services. It includes, but is not necessarily limited to, steam traps, condensate pumps and drains.
<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this program.
Maintenance Tech's:	Qualified building engineers will perform monthly inspections and annual maintenance of steam system components, and generate repair orders when problems are detected.
Service Provider:	The Service Provider shall propose service schedules prior to implementation. The JCC shall review all service schedules.



<b>Section 5: General Requirements</b>		<i>The Service Provider shall provide all supervision, labor, materials, tools, and equipment in the performance of this program. The following sections demonstrate examples of common tasks with relative standards for their performance. The sections are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations for steam systems.</i>
<b>Item</b>	<b>Requirement</b>	
1.	A monthly inspection of all steam traps, condensate pumps and drains will be conducted. The service provider must note the condition of all such components, and create repair work orders for any issues discovered in the course of routine inspection.	
2.	The service provider will conduct quarterly preventative maintenance on all pumps to ensure pump/motor bearings are greased in accordance with manufacturer recommendations.	

<b>Section 6: Additional Requirements</b>		<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
<b>Item</b>	<b>Requirement</b>	
1.	<p><b>Service Schedule</b></p> <p>Services will be performed by the Contractor during regular hours of operation in the various buildings, except when special conditions require servicing to be done when a building or area is vacated after regular working hours or on weekends. A service schedule shall be proposed and approved by the JCC prior to implementation.</p>	

<b>Section 7: Cost Basis</b>		
Steam Systems	TBD.	





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>P5 Steam System Maintenance Annual PM Procedures</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Annual	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			P5-A

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of Steam System Maintenance Program is to ensure that facilities equipped with steam systems are properly maintained to ensure the safety and efficiency of steam utilities.
<i>Scope:</i>	This program shall cover all maintainable assets used in the piping and control of steam services. It includes, but is not necessarily limited to, steam traps, condensate pumps and drains.
<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this program.
Maintenance Tech's:	Qualified building engineers will perform monthly inspections and annual maintenance of steam system components, and generate repair orders when problems are detected.
Service Provider:	The Service Provider shall propose service schedules prior to implementation. The JCC shall review all service schedules.



<b>Section 5: General Requirements</b>		<i>The Service Provider shall provide all supervision, labor, materials, tools, and equipment in the performance of this program. The following sections demonstrate examples of common tasks with relative standards for their performance. The sections are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations for steam systems.</i>
<b>Item</b>	<b>Requirement</b>	
1.	A monthly inspection of all steam traps, condensate pumps and drains will be conducted. The service provider must note the condition of all such components, and create repair work orders for any issues discovered in the course of routine inspection.	
2.	The service provider will conduct quarterly preventative maintenance on all pumps to ensure pump/motor bearings are greased in accordance with manufacturer recommendations.	
3.	Annually, all pumps shall receive a full service to ensure all seals are inspected and replaced, as necessary and in accordance with manufacturer recommendations. Electrical connections shall be tested and the results recorded for trending purposes.	

<b>Section 6: Additional Requirements</b>		<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
<b>Item</b>	<b>Requirement</b>	
1.	<b>Service Schedule</b>  Services will be performed by the Contractor during regular hours of operation in the various buildings, except when special conditions require servicing to be done when a building or area is vacated after regular working hours or on weekends. A service schedule shall be proposed and approved by the JCC prior to implementation.	

<b>Section 7: Cost Basis</b>	
Steam Systems	TBD.



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>P6 Pneumatic Compressor System Monthly PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	9/15/2019	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Monthly	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:	
General Facility Services Products	Compressors	Rotary Compressors	23-27 21 17 17	
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:	
			P6-M	
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.				
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:	

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:	
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.	
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the pneumatic compressor system.	
Responsibilities:		
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.	



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Apply LO/TO to the unit disconnect switch.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Do not wear loose clothing that could get caught in machinery.		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There should be no impact to normal operations during this PM procedure.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Not required.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Critical Facility Work Rules. Notify Leadership before any change is made.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
	Perform a visual inspection of the machine for any leaks, dust build up or unusual noise or vibration.			
3.	Disconnect power and apply LO/TO device. Release all pressure from the system.  Vent pressure from the unit by slowly unscrewing the coolant fill cap one turn. Unscrewing the fill cap opens a vent hole, drilled in the cap, allowing pressure to release to atmosphere. Do not remove the fill cap until all pressure has vented from the unit. Also vent piping by slightly opening the drain valve.			
4.	Drain air receiver of condensate, or check and verify operation of automatic condensate drain.			
5.	Remove and clean package pre-filter, replace if needed			
6.	Check the cooler(s) for build up of foreign matter. Clean if necessary by blowing out with air or by pressure washing.			
7.	Wipe down exterior of compressor with a damp cloth. A mild cleaning agent may be used.			
8.	Remove LO/TO devices and re-energize unit.			
9.	Check coolant level and replenish as needed.			
10.	Communicate completion time to facility manager and CMMS Administrator.			



<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:





# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>P6 Pneumatic Compressor System Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	9/15/2019	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
General Facility Services Products	Compressors	Rotary Compressors	23-27 21 17 17
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			P6-A
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the pneumatic compressor system.
Responsibilities:	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Apply LO/TO to the unit disconnect switch.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input checked="" type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input checked="" type="checkbox"/> Other (describe): Do not wear loose clothing that could get caught in machinery.		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a vacuum for cleaning purposes.



	Fall Protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.) Use nitrile gloves when cleaning.		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There should be no impact to normal operations during this PM procedure.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Not required.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Critical Facility Work Rules. Notify Leadership before any change is made.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	Disconnect power and apply LO/TO device. Release all pressure from the system.  Vent pressure from the unit by slowly unscrewing the coolant fill cap one turn. Unscrewing the fill cap opens a vent hole, drilled in the cap, allowing pressure to release to atmosphere. Do not remove the fill cap until all pressure has vented from the unit. Also vent piping by slightly opening the drain valve.  Remove drain and clean screen of debris.			
4.	Fully inspect all external surfaces, and fittings. Report any excessive corrosion, mechanical or impact damage, leakage or other deterioration.			
5.	Take coolant sample for fluid analysis. Coolant changes will be determined by the result of this analysis.			
6.	Drain air receiver of condensate, or check and verify operation of automatic condensate drain.			
7.	Check the operation of the high temperature protection switch (109°C).			
8.	Replace elements in IRGP and IRHE filters.			
9.	Change the coolant filter.			
10.	Check scavenge screen for blockage, clean if required.			
11.	Change the separator element.			



<b>12.</b>	Change the Air Filter element.			
<b>13.</b>	Change the package pre-filter.			
<b>14.</b>	Check Drive Belts. Drive belts should be changed every two years, or earlier if needed.			
<b>15.</b>	Lubricate motors with grease fittings. For motors without grease fittings, replace sealed bearings every four years.			
<b>16.</b>	Perform a thorough inspection of the compressor cooling-air discharge grating and the aftercooler coils. If a dust/dirt buildup is visible, clean the grating or coils to remove the buildup.			
<b>17.</b>	Wipe down exterior of compressor with a damp cloth. A mild cleaning agent may be used.			
<b>18.</b>	Remove LO/TO devices and re-energize unit.			
<b>19.</b>	Check coolant level and replenish as needed.			
<b>20.</b>	Communicate completion time to facility manager and CMMS Administrator.			

<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

**For plumbing systems not covered under the P1 through P6 designations, the contractor must complete the following form for each such system and for each PM frequency.**

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>P7 Unique Plumbing System PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
Procedure Frequency:		Level of Risk:	

<b>Section 2: Site Information</b>	Facility Name:	Work Order Number:
Street Address:	City:	State: Zip:

<b>Section 3: Procedure Overview</b>	Work Area:	Affected Systems:	
		Plumbing	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			P7
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.			
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the asset.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.
Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.

<b>Section 5:</b>				
<b>Facility Impacts</b>				
<b>Facility Equipment or System</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Details:</b> <i>Define specific impact to affected equipment or systems; lockout/tag out requirements.</i>
Electrical Utility Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Provide any additional relevant detail not covered above:</i>				





# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at:

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input type="checkbox"/> Sharp Edges/ Pinch Points
	<input type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input type="checkbox"/> Arc Flash PPE
	<input type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input type="checkbox"/> Other (describe):		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Electrical	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Hand & Power Tools	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Fall Protection	<input type="checkbox"/> Yes <input type="checkbox"/> No	



	Hot Work	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No		
	Other	<input type="checkbox"/> Yes <input type="checkbox"/> No Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)		
	Housekeeping	Clean up area upon completion of PM procedure.		
	Pre-Work Safety Briefing	<input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1:  Risk 2:
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1:  Contingency Plan 2:
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Site Safety Policies and to OSHA/CalOSHA regulations.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
--	---

- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

<b>Step</b>	<b>Procedure</b>	<b>Time</b>	<b>Date</b>	<b>Initials</b>
1.				




<b>Section 11: Procedure Approval</b>		<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>	
Dry Run Performed (Physical Walkthrough)		DATE:	TIME:
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Approval	NAME:	TITLE:	DATE:



# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>R1 Rounds and Readings</b>		
Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	12/10/2018	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:		Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:
Street Address:		City:	State:      Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:
			R1

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:
	The purpose of Rounds & Readings (R&R) is to ensure that facilities and critical building systems are provided with a minimum level of inspection on an appropriate frequency based on the technical requirements of the systems and complexity of the facility to validate operation and functionality of the facility.
Scope:	The Service Provider shall perform R&R on each facility based on the appropriate size matrix. While generally the size of each building defines its technical complexity, those facilities that don't meet this standard model should be identified by the Service Provider and the Regional Facilities Management Team and the Service Provider should agree on an appropriate R&R level. Causal factors for this deviation may be non-standard hardware or court specific service requirements.
	<i>NOTE: If a facility does not have personnel assigned full time, weekly activities shall occur on a monthly basis (during the monthly scheduled service).</i>



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will review and approve all service schedules.
Service Provider:	The Service Provider shall propose service schedules prior to implementation and shall perform rounds and readings on each facility based on the appropriate size matrix.

<b>Section 5: General Requirements (Part 1)</b>	<i>The following matrix is designed to demonstrate examples of common tasks aligned with facility size parameters along with relative time standards for the performance of the tasks. The sections are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations for common R&amp;R services.</i>
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<b>Item</b>	<b>Inspection Parameters</b>	<b>Number of Occurrences</b>	<b>Frequency</b>	<b>Duration (mins)</b>
<b>1.</b>	<b>Mechanical Room/Penthouse</b>			
	Look, Listen, Report	5	Times / Week	5
<b>2.</b>	<b>Building HVAC Systems</b>			
	Building Automation System - Review Building Conditions	5	Times / Week	5
	Court Room Temperature Read and Record	5	Times / Week	5
	Holding Room Temperature Read and Record	5	Times / Week	5
	Package Unit Properly Functioning	2	Times / Week	5
	Building Static Pressure	5	Times / Week	5
	Makeup Air Percentage/CFM	5	Times / Week	5
<b>3.</b>	<b>Chiller Water System</b>			
	Chilled Water Temperature Supply/Return	5	Times / Week	5
	Chilled Water Pressure	2	Times / Week	1
	Chiller Load Readings Recorded	5	Times / Week	1
	Chilled Water Pump Temperature	2	Times / Week	1
	Chilled Water Pump Pressure	2	Times / Week	1
	Compressor Oil Level - Visual	2	Times / Week	1
	Condenser Water Temperature	2	Times / Week	1
	Condenser Water Pressure	2	Times / Week	1



# Maintenance Operations Procedure

<b>Item</b>	<b>Inspection Parameters</b>	<b>Number of Occurrences</b>	<b>Frequency</b>	<b>Duration (mins)</b>
	Condenser Water Pump Temperature	2	Times / Week	1
	Condenser Water Pump Pressure	2	Times / Week	1
	Cooling Tower Water Level	2	Times / Week	1
	Cooling Tower Temp Reading and Record	5	Times / Week	5
	Cooling Tower Water Test - Record	1	Times / Week	10
	AHU Temperature	2	Times / Week	1
	AHU Pressure	2	Times / Week	1
	Chilled Water Flow Meter	2	Times / Week	1
	Condenser Water Flow Meter	2	Times / Week	1
	Air Handler Unit Filter (AHU) DP Status	2	Times / Week	5
	AHU Humidification Percentage	2	Times / Week	5
	Refrigerator Temperature (Commercial Kitchen Only)	1	Times / Week	5
<b>4.</b>	<b>Hot Water System</b>			
	Boiler Temperature Supply/Return	5	Times / Week	1
	Boiler Pressure	5	Times / Week	1
	Heating / Cooling Pump Pressures Read and Record	5	Times / Week	1
	Boiler Blow Down	1	Times / Week	5
	Boiler Low Water Cut Off Test	1	Times / Week	15
	Boiler Water Test - TDS/PH	1	Times / Week	5
	Closed Loop System Water Test/Treat - Record	1	Times / Week	10
	Open Loop System Water Test/Treat - Record	5	Times / Week	10
	Domestic Hot Water Temperature	1	Times / Week	1
	Domestic Hot Water Pressure	1	Times / Week	1
	AHU Heating Water Temperature	2	Times / Week	1
	AHU Heating Water Pressure	2	Times / Week	1
	Steam Temperature	2	Times / Week	1
	Steam Pressure	2	Times / Week	1



<b>Item</b>	<b>Inspection Parameters</b>	<b>Number of Occurrences</b>	<b>Frequency</b>	<b>Duration (mins)</b>
<b>5.</b>	<b>Pneumatic Systems</b>			
	Building Air Pressure Recorded	5	Times / Week	5
	Air Compressor Pressure Read and Record	1	Times / Week	5
	Air Compressor Condensate Drained (Seasonal)	1	Times / Week	5
	Air Compressor % Run Time Check	1	Times / Month	5
<b>6.</b>	<b>Electrical Systems - Main Electrical Room</b>			
	Main Switchboard Appropriate Breakers Correct Position	2	Times / Week	5
	Read and Record Phase Loads / Voltage / Temps	1	Times / Week	5
	Noises, Vibrations, High Temps, Note and Report	1	Times / Week	5
	UPS Battery Voltage Read and Record	1	Times / Week	2
	ATS - Validate Ready Status	1	Times / Week	1
	Lighting Timers - Validate Correct Time and Appropriate Schedule	1	Times / Week	5
	Read and Record Electrical/Gas/Water/Waste Water Meter Readings - Select Facilities		On Demand	5
<b>7.</b>	<b>Conveyance Systems</b>			
	Elevators/Escalators - Validation of Operation (Each)	5	Times / Week	3
	Wheelchair Lift Compliance Inspection (Each)	1	Times / Week	10
<b>8.</b>	<b>ADA Entrance/Exit Devices, Emergency Lights, Exit Signs</b>			
	Validation of Operation (Each), illumination of Lights/Signage (Wired and unwired)	3	Times / Week	3
<b>9.</b>	<b>Fire/Life Safety Systems</b>			
	Anunciator Panel - Inspect for Alarm Conditions	2	Times / Week	5
	Specialty Fire Suppression Systems - Halon/FM 200 - Inspect for Alarm Conditions	2	Times / Week	5
	Ansul Systems - Validate That Nozzle Caps Are In Place	1	Times / Month	5
	Emergency Eye Wash/Shower Stations - Inspect	1	Times / Week	5
	Fire Extinguisher Inspection	1	Times / Month	30





# Maintenance Operations Procedure

<b>Item</b>	<b>Inspection Parameters</b>	<b>Number of Occurrences</b>	<b>Frequency</b>	<b>Duration (mins)</b>
<b>10.</b>	<b>Building Misc Support</b>			
	Court Room Audio Visual Equipment (1st thing in morning)	2	Times / Week	5
	Court Room Lighting	2	Times / Week	5
	Report the head count from facility's security screening equipment for each security-screened entrance.	1	Times / Week	5
	Drinking Fountain Pressure	1	Times / Month	5
	Card Key Access to all Doorways	1	Times / Month	5
	No Excessive Clutter or Obstruction Within Building	1	Times / Month	5
	Flag Relocation		On Demand	15
	Ice Control (Salting) - Seasonal		On Demand	60
<b>11.</b>	<b>Plumbing Systems</b>			
	Restrooms - Floor Drain Water Fill	1	Times / Month	5
	Fixture Review and Test (Per room)	1	Times / Month	5
	Isolation Valves - Exercise	1	Times / Week	5
	Grease Trap - Inspect	1	Times / Week	5
	Oil/Water Separator - Inspect	1	Times / Week	5
	Storm Drain Pump	1	Times / Week	5
	Sewage Pump	1	Times / Week	5
<b>12.</b>	<b>Exterior</b>			
	Policing Entry Areas - Trash / Cigarette Butts / Gum	1	Times / Week	15
	Security Door & Gates Operation Review	1	Times / Month	15
	Security Camera Views Inspection	1	Times / Month	15
	Landscaping Review	1	Times / Week	10
	Sprinkler Timer Check / Adjust - Seasonal	1	Times / Month	10

**Section 5:  
General Requirements  
(Part 2)**

*The following matrix is designed to provide basic size classifications for the various facilities and the associated system expectations.*



<b>Building Rounds and Readings Allocations By Square Footage</b>		
<b>Building System</b>	<b>Minutes per Week</b>	<b>Modification Factors</b>
<b>Buildings of 25,000 or less (Assumes Part Time Support)</b>		
Building HVAC Systems	42.5	
Electrical Systems - Main Electrical Room	12.125	
Conveyance Systems	12.5	
Fire/Life Safety Systems	10.625	Wheelchair count
Building Misc Support	14.75	
Plumbing Systems	1.25	Restroom Count
Exterior	17.5	
<b>Buildings of Between 25,000 and 100,000 Sq. Ft.</b>		
Mechanical Room/Penthouse	25	
Building HVAC Systems	85	
Electrical Systems - Main Electrical Room	24.25	
Conveyance Systems	25	
Fire/Life Safety Systems	21.25	Wheelchair count
Building Misc Support	29.5	
Plumbing Systems	2.5	Restroom Count
Exterior	35	
<b>Buildings Larger than 100,000 Sq. Ft.</b>		
Mechanical Room/Penthouse	25	
Building HVAC Systems	85	
Chiller Water System	116	Multiple Systems
Hot Water System	32	
Pneumatic Systems	36.25	
Conveyance Systems	24.25	
Fire/Life Safety Systems	25	Wheelchair count
Building Misc Support	29.5	



# Maintenance Operations Procedure

<b>Building Rounds and Readings Allocations By Square Footage</b>		
<b>Building System</b>	<b>Minutes per Week</b>	<b>Modification Factors</b>
Plumbing Systems	2.5	Restroom Count
Exterior	35	

<b>Section 6: Additional Tasks</b>		<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	<p><b>Wheel Chair Operational Testing</b></p> <p>Weekly wheelchair operational testing and inspections are a mandatory activity. The testing shall comply with California Code of Regulations, Title 8. Appropriate documentation must be maintained in accordance with Section 7 below.</p> <p>The Service Provider will train in-house technicians to perform this work. External or subcontracted elevator labor to provide this function is not allowed except by specific JCC approval and in those facilities where fulltime certified elevator technicians are required.</p>	
<b>2.</b>	<p><b>Ad Hoc Services</b></p> <p>The R&amp;R program is designed to manage predictable and routine maintenance tasks with a frequency of less than one month. Periodic adjustments and tailoring of the court specific R&amp;R tasking is allowed based on the approval of the Facilities Management Regional Staff.</p>	

<b>Section 7: Supporting Documentation</b>		<i>Identify all documents required to support successful completion of this work. The Service Provider shall provide sample documentation forms for review and approval by the JCC prior to the start of work.</i>
Preventive Work Orders	R&R work is to be documented in order to track general facility condition, system operational performance, and the discovery of building deficiencies. All inspection documentation related to the R&R activities will be loaded into the Computer Aided Facility Management (CAFM) computer program.	
Corrective Work Orders	Where deficiencies are identified, work order numbers or other similar documentation of the follow up and correction of the deficiency should be documented in the inspection log.	
Inspection Logs	In addition to uploading into CAFM, inspection logs are to be stored on-site in a secure and safe location but will be made available on demand of an appropriate governmental or JCC delegated agency.	



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>V1 Vertical Transportation Systems Program</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>		<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			V1

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of the Vertical Transportation Systems Program is to provide for operational support for conveyance systems including but not limited to: elevators, escalators, wheelchair lifts and dumbwaiter systems. This includes new installations, existing, altered and remodeled systems.
<i>Scope:</i>	Program requirements will include monthly, quarterly, semi-annual and annual preventive maintenance activities per industry standards and best practices.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this program. A performance-based annual review will be conducted with the contractor by the facility manager at his/her discretion.
<i>Service Provider:</i>	The Service Provider shall provide full preventive maintenance service for all conveyance systems.



<b>Section 5: General Requirements</b>		<i>Contractor shall provide all labor, tools, equipment, and materials necessary for the satisfactory performance of regularly scheduled preventive maintenance servicing. This includes any required callbacks, adjustments, lubrication, repairs, part replacements, testing and cleaning as required to maintain all elevator equipment in compliance with governing standards for condition and safe operating order, at all times.</i>
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	The maintenance procedure steps within the JCC Preventive Maintenance (PM) program demonstrate examples of common tasks and expectations relative to maintenance schedules. The PM task lists are not intended to describe the full spectrum of services or tasks, but to serve as an indicator of the service level expectations for conveyance systems. Where defined, services shall at a minimum comply with the procedures and frequencies as defined within the JCC PM Program.	
<b>2.</b>	Work will be documented by the Elevator Contractor using appropriate and standard compliant documentation. The Elevator Contractor shall provide copies of this documentation to the JCC at the time of service.	
<b>3.</b>	<p>Vertical Transportation System Program operational testing and inspections are mandatory activities. The testing shall comply with California Code of Regulations, Title 8. Appropriate documentation must be maintained in accordance with Item 5 below.</p> <p>Elevator Contractor shall conduct the following tests, and any other tests required by California Division of Fire Safety, Elevator Safety Unit, the State of California, the Federal government and any other governing agency or code that is in effect at the date of signing this Contract. Services shall include, but not be limited to:</p> <p><b>Fire Recall Testing</b></p> <p>Elevator Contractor shall provide quarterly inspections and testing of the Firefighter's Service-Phase I and Phase II and standby power operation, if installed. Any additional cost to complete the above inspections and testing on overtime shall be the responsibility of Elevator Contractor. Elevator Contractor shall maintain an up-to-date log of Firefighter's Service testing in the machine rooms and submit the results to a JCC authorized representative on a quarterly basis. Firefighter's Service testing shall be entered and recorded on a form supplied by Elevator Contractor and/or as required by the State of California Elevator Inspection Department.</p> <p><b>Load Testing</b></p> <p>Periodic regulatory tests, including but not limited to full load testing, are to be incorporated into the baseline service contract.</p>	
<b>4.</b>	<b>Repair or Modification Services</b>	
	Repairs and elevator modifications, enhancements, or other improvements will be handles as separate SWOs or FM projects. If found during routine maintenance, or upon request, the contractor will provide a cost estimate for necessary repairs or refurbishment actions.	
<b>5.</b>	Work will be documented by the Elevator Contractor using appropriate and standard compliant documentation. The Elevator Contractor shall provide copies of this documentation to the JCC at the time of service.	



# Maintenance Operations Procedure

<b>Section 6: Additional Requirements</b>	<i>The contractor is expected to provide conveyance system services in compliance with the service schedule defined below.</i>
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<b>Item</b>	<b>Requirement</b>
<b>1.</b>	<p><b>Service Schedule</b></p> <p>Services will be performed by the Contractor during regular hours of operation in the various buildings, except when special conditions require servicing to be done when a building or area is vacated after regular working hours or on weekends. A service schedule shall be proposed and approved by the JCC prior to implementation.</p>

<b>Section 7: Cost Basis</b>	
Conveyance System Services	TBD.



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>W1 Water Treatment Services</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	9/15/2019	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>		<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			W1

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of the water treatment program is to ensure the longevity of the equipment through proper preventive maintenance and best management practices in order to provide environmental safety and a safe working environment for the service provider (SP), court staff and the public.
<i>Scope:</i>	<p>The service provider shall perform water treatment services to provide a comprehensive, full-service water treatment program for cooling towers, chilled water loops, and hot water loops at sites throughout the JCC asset portfolio. The selected contractor shall be required to:</p> <ul style="list-style-type: none"> <li>• chemically treat the water in water loops and cooling towers once per month;</li> <li>• conduct monthly tests on equipment to verify chemical levels are adequate;</li> <li>• conduct bacteria testing on cooling towers four times per year and;</li> <li>• repair or replace dosage equipment as needed.</li> </ul>



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this program. A performance-based quarterly review will be conducted with the contractor by the facility manager, at his/her discretion.
Maintenance Tech's:	Qualified building engineers will perform daily, weekly or monthly monitoring of chemical levels within each system as directed by the chemical company. All work shall be performed by qualified personnel in accordance with applicable laws, and regulations.
Service Provider:	<p>In addition to following all of the safety requirements, the service provider shall perform the following tasks:</p> <ul style="list-style-type: none"> <li>• Calibration/adjustment of chemical feed and monitoring controls.</li> <li>• Monitoring of conductivity control shall be done on a daily basis or until such time as conductivity is under normal control.</li> <li>• Cleaning of all probes in association with conductivity and pH control.</li> <li>• Checking of all chemical storage tanks and refilling as necessary.</li> <li>• Collection of samples for water analysis and testing.</li> <li>• The treatment supplier must perform Quarterly amine testing Steam/ Condensate at a minimum of one location, as part of the normal service.</li> <li>• All water side equipment must be inspected and photographed when available for inspection.</li> <li>• Condensers and Boilers shall undergo Video Borescope Inspection once per year to evaluate for treatment and cleaning effectiveness. All inspection reports shall be submitted with three bound copies, and be available within 30 days of each inspection.</li> </ul>

<b>Section 5:</b>	
<b>General Requirements</b>	
<i>Contractor shall supply all labor, supervision, materials, tools, equipment, testing reagents, supplies, and disposal procedures and make all necessary efforts required for treating and maintaining water conditioning. Contractor must provide all log sheets and fully functional water chemistry tracking and trending software.</i>	
<b>Item</b>	<b>Requirement</b>
<b>1.</b>	Condenser Water System chemical feed shall be initiated by water meter flow, whenever possible. Timer control is required in the case of biocides.
<b>2.</b>	All non-oxidizing micro-biocides shall be liquid and shall be fed by timer-initiated pump. There shall be no hand feeding of biocides to any open recirculation water system.
<b>3.</b>	All chemical(s) shall be fed downstream of all sampling and corrosion coupon sample ports. Appropriate check valves and control valves shall be proposed to preclude back feeding of one chemical into another and to allow easy disassembly of the mechanisms for maintenance. Chemical feed points should be into a constantly circulating line at points far enough apart to ensure good mixing and no concentrated chemical interactions.
<b>4.</b>	All Halogen pumps shall have degasification heads.
<b>5.</b>	Secondary Containment is required for all chemical containers (even 5 gallon pails) to eliminate the risk of a spill.



# Maintenance Operations Procedure

<b>6.</b>	Non-oxidizing biocide pumps for the open systems shall be capable of delivering the full dose in one hour.
<b>7.</b>	The Contractor shall maintain and replace any unit that fails to maintain the treatment levels in the systems.
<b>8.</b>	Contractor shall perform bi-monthly service calls for all of the working Cooling Towers.
<b>9.</b>	Contractor shall perform monthly service calls for the Chilled Water Systems.
<b>10.</b>	Acceptable performance shall be Open System corrosion rates of no more than 1.0 mil/yr for mild steel and 0.1 mil/yr for copper. For Closed Loops, a maximum corrosion rate of 0.5 mils/yr for mild and galvanized steel and 0.1 mil/yr for copper and stainless steel in all systems. Tower bacteria counts shall be no more than 10,000 cells/ml total aerobic bacteria (50 cells/ml for anaerobic) while Chill bacteria counts shall be no more than 1,000 cells/ml total aerobic (50 cells/ml for anaerobic). No algae should be present. Clean heat transfer surfaces should be free from pitting as determined by the JCC Regional Facility Plant Engineer (FPE) and/or water consultant. Corrosion studies shall be performed quarterly.
<b>11.</b>	Service shall be interpreted as the testing of all of the treated systems, the review of written and computerized log sheets, inventory review, the inspection of chemical feed equipment, and general equipment inspection. A written report shall be completed during each and every service call. These service reports shall be reviewed and emailed to the JCC District or Area Administrator.

<b>Section 6: Additional Tasks</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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<b>Item</b>	<b>Procedure</b>		
<b>1.</b>	<p><b>Required Tests</b></p> <p>The following are the minimum required tests that must be performed during scheduled service visits:</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Raw Water</p> <ul style="list-style-type: none"> <li>• pH</li> <li>• Conductivity</li> <li>• M-Alkalinity</li> <li>• Calcium Hardness</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p>Tower Water</p> <ul style="list-style-type: none"> <li>• pH: Acceptable pH: Not less than 8 or greater than 9.5.</li> <li>• Conductivity: Conductivity: 1500-1600 mmhos (1500 – 1650 umhos)</li> <li>• Deposition control: No new deposition</li> <li>• Microbiological growth: &lt;10,000 cl/ml</li> <li>• M-Alkalinity</li> <li>• Calcium Hardness</li> <li>• Molybdenum</li> <li>• Phosphonate</li> <li>• Copper</li> <li>• Turbidity</li> <li>• Free Halogen</li> </ul> </td> </tr> </table>	<p>Raw Water</p> <ul style="list-style-type: none"> <li>• pH</li> <li>• Conductivity</li> <li>• M-Alkalinity</li> <li>• Calcium Hardness</li> </ul>	<p>Tower Water</p> <ul style="list-style-type: none"> <li>• pH: Acceptable pH: Not less than 8 or greater than 9.5.</li> <li>• Conductivity: Conductivity: 1500-1600 mmhos (1500 – 1650 umhos)</li> <li>• Deposition control: No new deposition</li> <li>• Microbiological growth: &lt;10,000 cl/ml</li> <li>• M-Alkalinity</li> <li>• Calcium Hardness</li> <li>• Molybdenum</li> <li>• Phosphonate</li> <li>• Copper</li> <li>• Turbidity</li> <li>• Free Halogen</li> </ul>
<p>Raw Water</p> <ul style="list-style-type: none"> <li>• pH</li> <li>• Conductivity</li> <li>• M-Alkalinity</li> <li>• Calcium Hardness</li> </ul>	<p>Tower Water</p> <ul style="list-style-type: none"> <li>• pH: Acceptable pH: Not less than 8 or greater than 9.5.</li> <li>• Conductivity: Conductivity: 1500-1600 mmhos (1500 – 1650 umhos)</li> <li>• Deposition control: No new deposition</li> <li>• Microbiological growth: &lt;10,000 cl/ml</li> <li>• M-Alkalinity</li> <li>• Calcium Hardness</li> <li>• Molybdenum</li> <li>• Phosphonate</li> <li>• Copper</li> <li>• Turbidity</li> <li>• Free Halogen</li> </ul>		



	<p>Closed System: Maintain system essentially free of scale, corrosion, and fouling to sustain the following water characteristics:</p> <p>Condensate Return</p> <ul style="list-style-type: none"> <li>• Hardness (Total) &lt;.1</li> <li>• pH 8.4-8.8</li> <li>• TDS umhos &lt;50</li> <li>• Conductivity</li> <li>• Amine (Quarterly)</li> </ul> <p>Chill and Hot Water Loops/Hot Water Boilers</p> <ul style="list-style-type: none"> <li>• pH: Acceptable pH; Not less than 7.5 or greater than 8.5 10.0 (except for piping flush and clean step where the pH level is in the alkaline range of 9.5 to 10.5)</li> <li>• Conductivity: Conductivity; 1500-1600 mmhos (1500 – 1650 umhos)</li> <li>• Hardness: &lt; 5 ppm. (when closed loops have soft water make-up water)</li> <li>• Molybdenum / Nitrite</li> <li>• Maximum corrosion rate of 0.5 mils/yr for mild and galvanized steel and 0.1 mil/yr for copper and stainless steel in all closed loop systems</li> <li>• Turbidity</li> </ul>
<p><b>2.</b></p>	<p><b>Water Softener</b></p> <ul style="list-style-type: none"> <li>• Evaluate use of softened water and eliminate where possible (e.g. for domestic cold water).</li> <li>• Eliminate use of timers for softener-recharge systems. This may result in more frequent than necessary backwashing.</li> <li>• For all ion-exchange and softening processes, set recharge cycles by the volume of water treated or use conductivity controllers where installed.</li> <li>• For all filtration processes, install pressure gauges to determine when to backwash or change cartridges. Backwash based upon pressure differential.</li> <li>• Test the quality of softened water as specified by the water treatment chemical sales engineer. This should be done to determine the required regeneration frequency.</li> <li>• Inspect the resin beads every three to five years and replace, if necessary.</li> <li>• Always discharge brine backwash regeneration to a sanitary sewer. Brine must never be discharged to a street, gutter, parking lot, or storm drain.</li> </ul>
<p><b>3.</b></p>	<p><b>Training</b></p> <p>The Contractor shall provide a minimum of two days to completely train SP personnel in the use and care of the equipment. Adequate training for all SP site supervisors /engineers should be provided when needed at no additional cost.</p>



# Maintenance Operations Procedure

<b>Section 6: Supporting Document- ation</b>	<i>Identify all documents required to support successful completion of this work.</i>
Safety Data Sheets (SDS)	The service provider will supply current SDS sheets with each delivery of chemicals and reagents.



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>B1 Building Exterior/Hardscape</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>	Monthly, Quarterly & Ad Hoc	<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			B1

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of the Building Exterior/Hardscape Program is to ensure services are provided to sweep and clean all streets, gutters and parking areas, on the premises of the facility, of accumulated sand, gravel, rocks, paper, leaves and other debris that may become barriers to the handicapped and which may clog gutters and storm drains.
<i>Scope:</i>	Sweeping shall consist of cleaning the parking lots and associated roadways from curb to curb including center lanes, inside curbs, outside curbs and turn lanes. Intersections and adjacent facility access points in the roadways where debris is deposited due to parking lot traffic patterns will also be cleaned. Clean water shall be used in all sweeping operations to wet the surface prior to cleaning.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this program. As needed, the facility manager will request additional cleaning services to ensure the facility meets the purpose outlined in this program.



Maintenance Tech's:	Qualified building engineers will perform daily, weekly or monthly monitoring of parking lots, and will report to the facility manager on the condition of these spaces.
Service Provider:	<p>The Service Provider shall be responsible for protecting all property and features from damage during the execution of this contract. The Service Provider shall repair or replace damaged property or features in a manner that restores their condition to that which existed prior to the start of the contract.</p> <p>The Service Provider shall provide a sweeper equipped with:</p> <ul style="list-style-type: none"> <li>• An external and internal water spray system for the purpose of dust reduction. External spray, including but not limited to external system, shall wet areas being swept or vacuumed. While sweeping, the Service Provider shall be responsible for ensuring that the sweeper spray system operates as designed by the manufacturer at all times.</li> <li>• The Service Provider's vacuum sweeper shall have a minimum hopper capacity of six (6) cubic yards.</li> <li>• The Service Provider's mechanical broom sweeper shall have a minimum hopper capacity of four (4) cubic yards.</li> <li>• The Service Provider's mechanical and vacuum sweepers shall be equipped with dual gutter brooms.</li> <li>• Both types of sweepers shall have minimum cleaning (sweeping) dimensions of ten (10) feet when the gutter brooms are extended.</li> </ul>

<b>Section 5: General Requirements</b>		<i>The Service Provider shall provide all supervision, labor, materials, tools, and equipment, including but not limited to, street sweeper and backpack blower.</i>
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	A monthly inspection of all building exterior areas will be conducted by the service provider. Walkways will be cleaned or swept as needed. The service provider will notify the facility manager of the current condition of building exterior spaces and provide appropriate recommendations for maintenance.	
<b>2.</b>	The sweeping equipment utilized to sweep the roadways and parking lots must be equipped with rotating curb brushes as well as main brushes.	
<b>3.</b>	The sweeping equipment must have visible markings and warning devices to warn other roadway users of a slow moving vehicle. Multiple strobes, beacons, flashing lights and surface reflectors must be visible from all directions.	
<b>4.</b>	A lighted directional arrow board must be utilized when required by traffic control standards and/or traffic control policies.	
<b>5.</b>	All warning devices shall conform to U.S. Department of Transportation regulatory requirements.	
<b>6.</b>	The annual sweeping service shall consist of four (4) complete sweeping services at three (3) month intervals with the option of (4) four additional complete sweeping requests on an as-needed basis	
<b>7.</b>	The sweeping shall be performed Monday through Friday between the hours of 6:00 PM and 12:00 PM.	





# Maintenance Operations Procedure

<b>Section 6: Qualifications</b>		<i>The service provider will meet the following minimum qualifications.</i>
<b>Item</b>	<b>Qualification</b>	
<b>1.</b>	The Service Provider shall have at least three (3) years of successful experience in providing parking lot and roadway sweeping capabilities that are comparable in terms of the operational goals required by this program.	
<b>2.</b>	The Service Provider shall have technicians/staff trained and knowledgeable in both the equipment and skills required to perform this service.	
<b>3.</b>	The Service Provider must be licensed to do business in the State of California. The Service Provider will be requested to provide a copy of said license to the Administrative Office of the Courts.	

<b>Section 7: Cost Basis</b>	
Sweeping Services	The cost of sweeping services shall be based on four (4) complete sweeping services on a unit cost basis per 100 square feet of sweeping surface area annually.



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>F1 Fountain Maintenance</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>		<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			F1

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of fountain maintenance services is to ensure that decorative fountains are clean, neat, healthy, and have a professional appearance every day through best management practices (BMP's).
<i>Scope:</i>	
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this program.
<i>Maintenance Tech's:</i>	Qualified building engineers will perform daily, weekly or monthly monitoring of facility fountains and report deficiencies to the facility manager.
<i>Service Provider:</i>	The Service Provider shall propose service schedules prior to implementation. The JCC shall review all service schedules.



<b>Section 5: General Requirements</b>		<i>The Service Provider shall provide all supervision, labor, materials, tools, and equipment in the performance of this program. The following sections demonstrate examples of common tasks with relative standards for their performance. The sections are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations for decorative fountain services.</i>
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	Unless otherwise specified by the JCC, decorative fountains are not intended for interactive public use. All fountains shall be re-circulating unless otherwise directed by the JCC. Fountains will be treated with a level of disinfection sufficient to reduce bacteria and prevent the growth of algae and moss, but there is not an expectation that they will meet the potable water standard as defined by State and local law.	
<b>2.</b>	<p>Decorative fountains must be de-chlorinated or de-brominated prior to discharge to the street, storm drain, or sanitary sewer.</p> <ul style="list-style-type: none"> <li>Using a pool test kit, check the residual chlorine/bromine level prior to discharging. Discharge water when residual chlorine measures zero.</li> <li>The de-chlorinated or de-brominated pool water may be drained to the storm drain or sanitary sewer, if draining to the sanitary sewer proper must be taken to ensure code compliance.</li> </ul> <p>It is important to note that discharges of fountain water to the street gutter will flow untreated through storm drains to arroyos, creeks, rivers and, ultimately, the ocean. Any pollutants present in the water at the time it is discharged will not be removed prior to reaching the ocean. It is therefore very important that this water contain no pollutants.</p>	
<b>3.</b>	In order to prevent hydraulic overload of the sanitary sewer, pool water may not be discharged to the sanitary sewer within one to two days after the cessation of a rain event.	
<b>4.</b>	Maintenance discharges from fountains such as filter backwash, acid wash, and plaster wastes shall never be discharged to the public right-of-way or storm drain system. Fountain water may not be drained in such a manner that the water encroaches on an abutting property or floods the public right-of-way.	

<b>Section 6: Additional Requirements</b>		<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	Spill prevention, control & cleanup materials must be readily available and in a known location. Cleanup spills immediately and use dry methods if possible. Properly dispose of spill cleanup material.	
<b>2.</b>	Bulk chemicals shall not be kept on site; BMP requires the minimum amount of chemical to be stored on site required to support a fountain water treatment program. The implementation of a “just-in-time purchasing” inventory control program should be undertaken.	
<b>3.</b>	Provide documented training in the safe handling and disposal of chemicals.	



# Maintenance Operations Procedure

<b>Section 7: Cost Basis</b>	
Decorative Fountains	TBD.



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>F2 Above-Ground/Underground Fuel Storage Tanks</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>		<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			F2

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	AST (Above-ground Fuel Storage Tanks) and UST (Underground Fuel Storage Tanks) are generally fuel storage tanks used for diesel generators and fire pumps in JCC buildings. The purpose of the AST/UST maintenance program is to maintain these tanks in good serviceable condition and to preclude any leaks or discharge of hazardous material to the environment due to failure of the tank or associated parts.
<i>Scope:</i>	The contractor shall perform periodic inspection of tanks located above ground or underground and assess the condition of tanks and surroundings. The maintenance program does not include "Designated Operator" tasks for UST maintenance that are specified by California Code of Regulations, Title 23, Division 3, Chapter 16. Contractor shall maintain the tanks in clean serviceable condition.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this program.
<i>Maintenance Tech's:</i>	Qualified building engineers will perform daily, weekly or monthly monitoring of storage tanks and report deficiencies to the facility manager.



Contractor:	<p>The program includes maintenance of the tanks in order to comply with State, Federal and local applicable codes. The contractor will be responsible for fulfilling all of the maintenance requirements for the type of AST/UST defined within the specific contract for service.</p> <ul style="list-style-type: none"> <li>• Most of the tanks are diesel fuel storage tanks for diesel generators and fire pumps and are located above ground. Some may be located in floors or in vaults below ground level (partially or completely).</li> <li>• Other tanks may be chemical tanks for chemicals such as glycols or hydraulic fluid.</li> </ul> <p>JCC’s facility portfolio currently includes 19 facilities [Airport Courthouse, B.F. Sisk Courthouse, Betty Lou Lamoreaux Justice Center, Central Justice Center (Santa Ana), Chatsworth Courthouse, Clara Shortridge Foltz Criminal Justice Center, Compton Courthouse, Fremont Hall of Justice, Hall of Justice (Riverside), Hayward Hall of Justice, Inglewood Courthouse, Juvenile Courthouse, Michael D. Antonovich Antelope Valley Courthouse, New San Diego Central Courthouse, New Santa Clara Family Justice Center, New Stockton Courthouse, North Butte County Courthouse, Richard E. Arnason Justice Center, and Southwest Justice Center-Murrieta] that require Spill Prevention, Control, and Countermeasures (SPCC) plans under 40 CFR Section 112. Site-specific inspection plans for these facilities have been or will be developed and implemented as part of this contract. In addition, four other facilities require SPCC plans for below ground tanks under CA Health &amp; Safety Code, Chapter 6.7, Section 25270. These SPCC Plan facilities require more intensive inspections, reports, and training documentation than other JCC facilities.</p> <p>Tanks may be constructed of steel, plastic or fiberglass and are of various sizes. Most tanks have secondary containments fabricated of plastic, fiberglass, steel or poured concrete with coating. Some tanks are double-wall with sensors to detect any leaks.</p> <p>Tanks include supply and return pipes, vent pipes, delivery pipes, valves, leak alarms, power for alarms and controls, supply pumps, and concrete or metal fence protections Tanks may be located either indoors or outdoors.</p>
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<b>Section 5:</b>		<i>The Contractor shall provide all supervision, labor, materials, tools, and equipment in the performance of this program. The sections are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations associated with AST/USTs.</i>
<b>General Requirements</b>		
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	Any existing leaks or potential leaks shall be repaired. This includes tanks and associated pipes (buried or exposed), electrical, alarm system and any other devices that may be part of the tanks.	
<b>2.</b>	Integrity of any secondary containment structure or liner shall be assessed and repaired as necessary. If cathodic protection is installed on the tank verify the integrity of such protection and repair if needed.	





# Maintenance Operations Procedure

<b>3.</b>	A vapor recovery system will be rare in these tanks, but if it does exist then it shall be checked for proper operation.
<b>4.</b>	Existing leaks shall be reported in accordance with local, State and Federal regulations. If any leak occurred, ground soil samples may need to be taken and tested per regulations.
<b>5.</b>	Contractor shall provide testing of material (chemical) stored in the tank to assess the condition for any contamination or degradation.

<b>Section 6: Additional Requirements</b>	<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
<b>Item</b>	<b>Requirement</b>
<b>1.</b>	In the first year of the contract, the contractor will perform fuel polishing for storage tanks containing fuel. Thereafter, fuel polishing will be performed as needed with a minimum recurrence of every three years.
<b>2.</b>	<p>Compliance with all applicable federal, state, and local environmental statutes, instructions, manuals, handbooks, regulations, guidance, policy letters, and rules (including all changes and amendments) is required. This includes but is not limited to the following:</p> <ul style="list-style-type: none"> <li>• Local Hazmat codes and Fire Departments' requirements</li> <li>• California Code of Regulations, Title 23, Division 3, Chapter 16</li> <li>• California Health and Safety Code, Chapter 6.7</li> <li>• CalARP</li> <li>• EPA 510-B-97-007</li> <li>• EPA 510-B-00-008</li> <li>• EPA 40 CFR Part 280, subparts A-H</li> <li>• EPA 520/UST-89/012</li> <li>• NFPA 30 and 30A</li> <li>• NFPA 329</li> </ul>
<b>3.</b>	Contractor and workers responsible for this service must be qualified and licensed in the State of California to handle chemicals of this nature. All applicable codes and regulations must be followed in performing these duties. Technician must pass and be current with California UST Service Technician Certification Test. Contractors shall provide all labor, materials and tools necessary to perform these services.

<b>Section 7: Cost Basis</b>	
Above-ground and Underground Storage Tanks	TBD.



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>G1 Landscape Maintenance</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
TBD			
<i>Procedure Frequency:</i>		<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
	Building Exterior		
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			G1

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of grounds maintenance services is to ensure that grass, trees, shrubs, plant beds and plants are clean, neat, healthy, and have a professional appearance every day.
<i>Scope:</i>	The Contractor shall perform maintenance and repair of grounds, landscaping, semi-improved areas, unimproved areas, and associated structures and appurtenances. The Contractor shall perform mowing, trimming, edging, aeration, and fertilization; weed and brush control; flower bed services; tree and shrub pruning; erosion control; debris, drain, and ditch cleanup; landscaping operations; and other services as required herein providing complete landscaping maintenance. All work shall be performed by qualified personnel in accordance with applicable laws, and regulations.
<i>Responsibilities:</i>	
<i>Facility Manager:</i>	The facility manager or designee will oversee implementation of this program.
<i>Maintenance Tech's:</i>	Qualified building engineers will perform daily, weekly or monthly monitoring of facility exterior spaces and report deficiencies to the facility manager.



Service Provider:	The Service Provider shall propose service schedules prior to implementation. The JCC shall review all service schedules. Service schedules shall be designed to be completed in a manner that does not negatively impact routine court operations.
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<b>Section 5: General Requirements</b>	<i>The Service Provider shall provide all supervision, labor, materials, tools, and equipment in the performance of this program. The following general requirements demonstrate examples of common landscaping tasks with relative standards for their performance. The requirements are not intended to describe the full spectrum of services, but to serve as an indicator of the service level expectations for common landscaping services.</i>
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<b>Item</b>	<b>Requirement</b>
<b>1.</b>	<p><b>Improved and Special Grounds</b></p> <p>Grass shall be cut on improved grounds. Grass clippings shall be removed or mulched when visible after mowing. Service Provider shall maintain the growth of grass height on improved grounds one to four (1 – 4) inches depending upon the type of grass. The height is a guideline for a neat and professional appearance. All improved grounds shall look well manicured at all times.</p>
<b>2.</b>	<p><b>Edging and Trimming</b></p> <p>Sidewalks, driveways, curbs, and other concrete or asphalt edges located in the improved grounds areas shall be edged at least every other mowing. Edging shall include removal of vegetation from cracks in sidewalks, driveways, and curbs within one-half (0.5) inch of the edged surface and to a depth of two (2) inches. Grass and weeds shall be trimmed around trees, shrubs, buildings, fences, poles, posts, fire hydrants, parking lot bumper blocks, boulders, and other fixed obstacles. Trimming height shall match surrounding area grass heights. All areas shall be trimmed concurrent with mowing. Damage to trees and shrubs from trimming shall be repaired by the Service Provider. If a plant should die or become unhealthy due to damage, the Service Provider will be responsible for replacing the damaged plant with a plant of same size and type. Plant replacement shall occur within fifteen (15) days of noticed damage.</p>
<b>3.</b>	<p><b>Watering</b></p> <p>All improved areas shall receive sufficient amounts of water to present a uniform green color without browning or barren areas resulting from lack of water. The Service Provider shall provide watering hoses and portable watering devices for irrigating areas that do not have sprinkler systems. The Service Provider's Water Management Plan will abide by local watering schedules and minimize water usage where possible.</p>
<b>4.</b>	<p><b>Fertilization</b></p> <p>The Service Provider shall fertilize all improved grounds to keep all improved grounds healthy, green, and uniform. The type and amount of fertilizer applied shall be based on soil conditions and state and local approved methods. Soil tests shall be conducted by a commercial soil laboratory. Such tests are the responsibility of the Service Provider.</p>
<b>5.</b>	<p><b>Beddings and Planted Areas</b></p> <p>The Service Provider shall maintain all bedding and planted areas so that they present a healthy and attractive appearance throughout the year and employ water saving methods; fertilize, water, edge, eliminate weeds, maintain mulch, and repair or replace damaged plants in shrub and plant beds.</p>



# Maintenance Operations Procedure

<b>6.</b>	<p><b>Maintenance of Trees, Shrubs, and Hedges</b></p> <p>The Service Provider shall prune trees, shrubs, and hedges in improved and semi-improved areas.</p> <ul style="list-style-type: none"> <li>• Trees and shrubs shall be pruned as required to maintain their natural growth characteristics and enhance the beauty and health of the plant.</li> <li>• Hedges shall be maintained to their natural mature height and shape.</li> </ul> <p>Trees will be pruned to maintain a safe environment. Minimum safety clearance is fourteen (14) feet over streets, twelve (12) feet over driveways, eight (8) feet over walk areas, and four (4) feet from buildings. Trimming/pruning of trees around utility poles/power lines is the responsibility of the Service Provider. The Service Provider shall notify JCC or designated representative when trimming/pruning around utility poles/power lines is needed.</p>
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<b>Section 6: Additional Requirements</b>	<i>The following additional requirements will be met by the service provider on facility properties as applicable.</i>
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<b>Item</b>	<b>Requirement</b>
<b>1.</b>	<p><b>All Grounds</b></p> <p>The Service Provider shall perform general litter patrol in all areas to ensure grounds present a neat appearance. Responsibilities shall include, but not be limited to, the removal and disposal of all natural debris, (tree limbs, dry brush, rodent habitats, dead animals, etc.), and man-made debris. During the fall months, fallen leaves shall be removed weekly from all affected areas. At other times leaves shall be removed as necessary to maintain a neat appearance. Areas damaged by the Service Provider’s vehicles, erosion, drought or insect/diseases shall be replaced, seeded, sprigged, or sod to meet the standards of surrounding areas.</p>
<b>2.</b>	<p><b>Semi-improved Grounds</b></p> <p>Service Provider shall maintain grass/vegetation on semi-improved grounds from four to fourteen (4 – 14) inches in height. The Service Provider shall maintain semi-improved grounds to maintain plant health, prevent fire hazards, and to mitigate security risks.</p>
<b>3.</b>	<p><b>Unimproved Grounds</b></p> <p>Unimproved areas need to be cut annually or as often as needed to maintain plant health, and to adhere to applicable fire prevention and security/safety requirements. Some unimproved areas may be populated with beneficial ground cover that does not require cutting. In such cases, the Service Provider shall maintain these areas such that beneficial ground cover is not infested with weeds.</p>

<b>Section 7: Cost Basis</b>	
Landscaping	TBD.



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	<i>Procedure Title:</i>		
	<b>PC1 Pest Control</b>		
<i>Author:</i>	<i>Creation Date:</i>	<i>Revision Number:</i>	<i>Revision Date:</i>
K. Avey	12/10/2018	Original	N/A
<i>Procedure Time Frame:</i>	<i>Expected Start Date:</i>	<i>Start Time:</i>	<i>Completed Time:</i>
Monthly			
<i>Procedure Frequency:</i>		<i>Level of Risk:</i>	<i>Per Service Provider Assessment</i>

<b>Section 2: Site Information</b>	<i>Facility Name:</i>		<i>Work Order Number:</i>
<i>Street Address:</i>		<i>City:</i>	<i>State:</i> <i>Zip:</i>

<b>Section 3: Procedure Overview</b>	<i>Work Area:</i>		<i>Affected Systems:</i>
<i>System:</i>	<i>Subsystem:</i>	<i>Equipment Category:</i>	<i>OmniClass Equipment Code:</i>
<i>Equipment Manufacturer:</i>	<i>Model Number:</i>	<i>Serial Number:</i>	<i>JCC Equipment ID:</i>
			PC1

<b>Section 4: Purpose, Scope and Responsibilities</b>	<i>Purpose:</i>
	The purpose of pest control services is to ensure that all pests (e.g. rats, mice, roaches, fleas, ants, silverfish, centipedes, millipedes, earwigs, spiders, crickets and all other common insects) are properly contained, eliminated and/or removed from court premises in an effective and timely manner.
<i>Scope:</i>	Contractor will use integrated pest management (IPM) methods, which means the selection, integration, and implementation of multiple pest control techniques based on predictable economic, ecological, and sociological consequences, making maximum use of naturally occurring pest controls, such as weather, disease agents, and parasitoids, using various biological, physical, chemical, and habitat modification methods of control, and using artificial controls only as required to keep particular pests from surpassing intolerable population levels predetermined from an accurate assessment of the pest damage potential and the ecological, sociological, and economic cost of other control measures.



<i>Responsibilities:</i>	
Facility Manager:	The facility manager or designee will oversee implementation of this program. A performance-based annual review will be conducted with the contractor by the facility manager at his/her discretion.
Service Provider:	<p>The Contractor is responsible for the implementation of the pest control programs required by this Maintenance Operations Procedure (MOP). The Contractor will provide pesticide applicators who have been trained and certified by a properly designated State of California lead agency as competent to handle and apply the classes of pesticide products necessary to implement the pest control programs required by this MOP.</p> <p>Further, the Contractor is responsible for ensuring that the pest control programs required under this MOP fully comply with the applicable Federal, State, and local pesticide laws and regulations within the legal jurisdiction that the premises covered by this contract are located.</p>

<b>Section 5: General Requirements</b>		<i>The Contractor shall furnish all labor, tools, materials, and equipment necessary to accomplish full treatment pest control services for all areas and buildings specified herein including all rooms, closets, toilets, kitchens, hallways, stairwells, attics, elevators, plus any other building portion or part not specifically described herein.</i>
<b>Item</b>	<b>Requirement</b>	
<b>1.</b>	<b>Inspection and Treatment</b>	
	<p>Full treatment pest control services will include inspection and treatments for rats, mice, cockroaches, ants, moths, and silverfish plus any other pests not specifically excluded from the contract. Services also include rat and mouse infestations located in burrows in the ground adjacent to buildings. If any pests are discovered by Court personnel, the Contractor will respond within 24 hours of notification to correct the situation.</p> <p>When it is necessary to install rodent bait boxes, the Contractor will supply a written report to the JCC which indicates the box location, date of installation, and removal.</p>	
<b>2.</b>	<b>Service Schedule</b>	
	<p>Services will be performed by the Contractor during regular hours of operation in the various buildings, except when special conditions require servicing to be done when a building or area is empty, such as after regular working hours or on weekends.</p> <p>The Service Provider is to coordinate all work with the JCC Facilities Supervisor for the area being treated, with an inspection and provision of a service schedule at the start of the treatment program. Any deviation from this schedule is to be reported immediately to the affected department. A JCC representative must sign a service ticket to verify that service was performed for each building. A copy of this signed statement must be included with each monthly invoice.</p>	
<b>3.</b>	<b>Service Coverage Areas</b>	
	<p>In addition to the individual units, all common areas including hallways, stairwells, public rest rooms, offices, recreation areas, kitchens, laundry rooms, garbage rooms, stock rooms, workshops, closets, and the exterior perimeter of the first floor of the building shall be treated.</p>	





# Maintenance Operations Procedure

<b>4.</b>	<p><b>Pesticide Products</b></p> <p>No pesticide shall be used in any pesticide program required by this contract in any manner inconsistent with its labeling. All pesticides used in the pest control programs covered by this contract shall be properly labeled for the control of the target pests against which they are being used, and strict adherence to label instructions shall be followed.</p>
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<b>Section 6: Additional Requirements</b>	<i>In addition to the general service requirements described above, the contractor shall provide the following additional tasks, as necessary.</i>
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<b>Item</b>	<b>Requirement</b>
<b>1.</b>	The Contractor shall report to the Facilities Area Supervisor any evidence or conditions conducive to pest infestation, which is not covered in the contract, at the time such condition is first noticed.
<b>2.</b>	The Contractor shall provide one call-back service per month per facility at no additional charge to the JCC. Call-back service will be requested by the JCC when previous treatment fails to control the pests specified herein.
<b>3.</b>	All insecticides, rodenticides, and bait stations shall be removed from the premises covered by this contract at its conclusion. Written certification of such removals shall be submitted to the Facilities Area Supervisor.

<b>Section 7: Cost Basis</b>	
Pest Control Services	TBD.



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# Maintenance Operations Procedure

<b>Section 1: Procedure Schedule Information</b>	Procedure Title:		
	<b>PV1 Photovoltaic (PV) System Annual PM Procedures</b>		
Procedure Author:	Creation Date:	Revision Number:	Revision Date:
K. Avey	1/15/2020	Original	N/A
Procedure Time Frame:	Expected Start Date:	Start Time:	Completed Time:
TBD			
Procedure Frequency:	Annual	Level of Risk:	Per Service Provider Assessment

<b>Section 2: Site Information</b>	Facility Name:		Work Order Number:	
Street Address:		City:	State:	Zip:

<b>Section 3: Procedure Overview</b>	Work Area:		Affected Systems:	
System:	Subsystem:	Equipment Category:	OmniClass Equipment Code:	
Electrical and Lighting Specific Products and Equipment	Electrical Generators	Photovoltaic Generators	23-35 11 17	
Equipment Manufacturer:	Model Number:	Serial Number:	JCC Equipment ID:	
			PV1-A	
Personnel Required/Affected: Name, position and contact information for each person assigned to complete work and manager or representative of occupants affected by work.				
JCC MX Personnel:	Contractor #1:	Contractor #2:	Affected Occupants:	

<b>Section 4: Purpose, Scope and Responsibilities</b>	Purpose:		
	To prevent asset degradation and failures of affected systems, and to maintain warranty effectivity when applicable.		
Scope:	Performance of manufacturer recommended preventative maintenance procedures for the photovoltaic system.		
Responsibilities:			
Facility Manager:	The facility manager or designee will oversee implementation of this procedure, providing an appropriate briefing on safety and execution of procedural steps.		



Maintenance Tech's:	Follow the safety guidelines and operational steps of this procedure as written. Stop performance of procedure if safety cannot be maintained and inform facility manager of problem and progress. Complete all required documentation.
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<b>Section 5: Facility Impacts</b>				
Facility Equipment or System	Yes	No	N/A	Details: Define specific impact to affected equipment or systems; lockout/tag out requirements.
Electrical Utility Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Generator System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Heating/Cooling System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ventilation System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Uninterruptible Power Supply System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Distribution System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Emergency Power Off (EPO) System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Detection Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Fire Suppression System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Monitoring System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Control System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Security System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
General Power and Lighting System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lockout/Tag Out Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Apply LO/TO to the unit disconnect switch.
<i>Provide any additional relevant detail not covered above:</i>				



# Maintenance Operations Procedure

<b>Section 6: Supporting Documentation</b>	<i>Identify all documents required to support successful completion of this work. Example: OEM manual, site safety plan, communication informing key stakeholder of work to be performed, etc. Provide hyperlinks to documents when available.</i>
Supporting Documents:	1. O&M Manual may be found at [Insert file location or web address].

<b>Section 7: Safety Requirements</b>			
<b>1.</b>	All personnel involved in the procedure have read and agree to adhere to the <b>Site Safety Policies</b> and <b>OSHA/CalOSHA regulations</b> .		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2.</b>	Are there <b>Potential Hazards</b> ? If Yes, check all that apply below.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	<input checked="" type="checkbox"/> Electrical	<input type="checkbox"/> Hazardous Chemicals	<input type="checkbox"/> Airborne Particulates <input type="checkbox"/> Impalement
	<input type="checkbox"/> High Pressure (water/pneumatic)	<input checked="" type="checkbox"/> High Temps	<input type="checkbox"/> Low Temps <input checked="" type="checkbox"/> Sharp Edges/ Pinch Points
	<input checked="" type="checkbox"/> Fall Hazards	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Other (List in spaces provided)
<b>3.</b>	<b>Personnel Protective Equipment (PPE)</b> required. Check all that apply		
	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input type="checkbox"/> Flash Proof Safety Glasses <input type="checkbox"/> Face Shield
	<input type="checkbox"/> Steel Toe Boots	<input checked="" type="checkbox"/> Reflective Vest / Clothing	<input type="checkbox"/> Hearing Protection <input checked="" type="checkbox"/> Arc Flash PPE
	<input checked="" type="checkbox"/> Cut Resistant Gloves	<input type="checkbox"/> Chemical Resistant Gloves	<input type="checkbox"/> Chemical Apron <input type="checkbox"/> Dust Mask
	<input type="checkbox"/> Self-Retracting Life Line	<input checked="" type="checkbox"/> Harness and Lanyard	<input type="checkbox"/> Respirator <input type="checkbox"/> Radio
	<input type="checkbox"/> Other (describe):		
<b>4.</b>	<b>Safe Work Practices</b> (precautions/controlling measures) to be followed.		
	<i>Provide a detailed discussion of the hazards associated with the work activities/location, including the safety measures/personal protective equipment (PPE) to be utilized to alleviate the hazard.</i>		
	HAZCOM	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Review SDS for all chemical cleaning agents.
	Electrical	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Use appropriate arc flash PPE when working on a powered system.
	Hand & Power Tools	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	May require use of a power sprayer for cleaning purposes.



	Fall Protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	For roof mounted systems, fall protection may be necessary.	
	Hot Work	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	UPS / Battery Safety	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Describe additional safety work practices, not described above, that will be used while performing the work. (Examples: confined space entry, scaffolding, aerial work platforms, etc.)	
			Use nitrile gloves when cleaning.	
	Housekeeping		Clean up area upon completion of PM procedure.	
	Pre-Work Safety Briefing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
<b>5.</b>	<b>Required Permits</b> <i>(Check all that apply)</i>			
	<input type="checkbox"/> Energized Work	<input type="checkbox"/> Hot Work	<input type="checkbox"/> Confined Space	<input type="checkbox"/> Other (specify) _____

<b>Section 8: Procedure Risks, Con- tingency Plans, &amp; Assumptions</b>	<i>Complete an Activity Hazard Analysis (AHA) and document all risks and controls. Determine the appropriate level of risk based on control measures inacted as part of this procedure.</i>
Risks	Risk 1: There should be no impact to normal operations during this PM procedure.
Contingency Plans	<i>Specific to the risk noted above, what is the plan to deal with the risk should it come to be realized during the course of the work?</i>  Contingency Plan 1: Not required.
Assumptions	Assumptions 1: Any deviation from this approved procedure must be reviewed, approved and accepted by both site and department management.  Assumptions 2: All personnel involved in the procedure have read and agree to adhere to the Critical Facility Work Rules. Notify Leadership before any change is made.



# Maintenance Operations Procedure

<b>Section 9: Notifications Page</b>	<i>The following notifications are to be made during the conduct of this procedure.</i>
Facility Management	Notify Facility Manager when PM procedure: Begins via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____ Is completed via <input type="checkbox"/> email <input checked="" type="checkbox"/> phone TIME: _____
CMMS Administrator	Notify CMMS Administrator when PM procedure: Is completed via <input checked="" type="checkbox"/> email <input type="checkbox"/> phone Time/Date: _____

<b>Section 10: Procedure Details</b>	<i>List the very specific steps that will be taken to complete this work. This should include every action taken from arrival on site to leaving the site and posting notification to key stakeholders.</i>
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- NOTES:
- Verify that Change Management approval has been received prior to performing work.
  - Log Time for major steps.
  - Notify facility management of unanticipated impacts to timeline.

Step	Procedure	Time	Date	Initials
1.	Check for safe equipment access.			
2.	Communicate start time to facility manager.			
3.	<b>General Visual Inspection</b> <ul style="list-style-type: none"> <li>• Confirm electrical enclosures are only accessible to authorized personnel, are secured with padlocks or combination locks, and have restricted access signage.</li> <li>• Check for corrosion on the outside of enclosures and the racking system.</li> <li>• Check for loose hanging wires in the array.</li> <li>• Check for signs of animal infestation under the array.</li> </ul>			
4.	<b>Roof Mounted Systems</b> <ul style="list-style-type: none"> <li>• Check the integrity of roof penetrations. Ensure they are watertight.</li> <li>• Ensure roof drainage is adequate, roof drains are not clogged, and confirm that there are no signs of water pooling in the vicinity of the array.</li> </ul>			
5.	<b>Ground Mount Arrays</b> <ul style="list-style-type: none"> <li>• Check for vegetation growth or other new shade items.</li> <li>• Check for ground erosion near the footings of a ground mount system. Look for signs of corrosion near the supports.</li> <li>• Confirm proper system signage is in place.</li> </ul>			
6.	<b>Cleaning</b> <ul style="list-style-type: none"> <li>• Using manufacturer-approved methods, clean the PV panels prior to proceeding with the detailed inspection.</li> <li>• Check for cleanliness throughout the site—there should be no debris in the inverter pad area or elsewhere.</li> </ul>			



<b>Detailed Visual Inspection</b>				
<b>7.</b>	Inspect the inverter/electrical pad to make sure it does not show excessive cracking or signs of wear. The inverter should be bolted to the pad at all mounting points per the manufacturer installation requirements. Depending on the size, location, and accessibility of the system to unqualified personnel, the inverters, combiner boxes, and disconnect switches should require tools or have locks to prevent unauthorized access to the equipment.			
<b>8.</b>	Verify all warning placards are in place, including arc flash or PPE requirements for accessing equipment. Replace missing placards, if available, or create W/O to have them replaced.			
<b>9.</b>	Inspect PV modules for defects that can appear in the form of burn marks, discoloration, delamination, or broken glass.			
<b>10.</b>	Ensure that the module wiring is secure and not resting on the roof, hanging loose and exposed to potential damage, bent to an unapproved radius, or stretched across sharp or abrasive surfaces.			
<b>11.</b>	Inspect racking system for defects including rust, corrosion, sagging, and missing or broken clips or bolts.			
<b>12.</b>	If sprinklers are used to spray the array, check that the water is free of minerals (demineralized) as these minerals can cause gradual performance degradation.			
<b>13.</b>	Inspect conduits for proper support, bushings, and expansion joints, where needed.			
<b>14.</b>	Open combiner boxes and check for torque marks on the connections. If they have not been applied, torque connectors to manufacturer specifications and apply torque marks for future inspections. Look for discoloration on the terminals, boards, and fuse holders.			
<b>15.</b>	Open the door to the disconnect(s) and look for signs of corrosion or damage. Check to make sure the cabinet penetrations are properly sealed and there is no evidence of water ingress. Check for torque marks on the terminals.			
<b>16.</b>	Perform a visual inspection of the interior and exterior of the inverter. Look for signs of water, rodent, or dust intrusion into the inverter. Check for torque marks on the field terminations.			
<b>17.</b>	If a weather station is present, ensure that the sensors are in the correct location and at the correct tilt and azimuth. A global horizontal irradiance sensor should be flat, and a plane of array irradiance sensor should be installed to the same pitch and orientation as the array. Irradiance sensors should be cleaned to remove dirt and bird droppings.			





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<p><b>Manufacturer-Specific Inverter Inspection</b></p> <p>Each inverter manufacturer will have specific requirements for inspection, testing, services, and documentation. Typical requirements for inverter inspections include:</p>			
18.	Record and validate all voltages and production values from the human-machine interface (HMI) display.		
19.	Record last logged system error.		
20.	Clean filters.		
21.	Clean the inside of the cabinet.		
22.	Test fans for proper operation.		
23.	Check fuses.		
24.	Check gasket seal.		
25.	Look for discoloration from excessive heat buildup.		
26.	Check integrity of lightning arrestors.		
27.	Check continuity of system ground and equipment grounding.		
28.	Check mechanical connection of the inverter to the wall or ground.		
29.	Check internal disconnect operation.		
30.	Verify that current software is installed.		
<p><b>Manufacturer-Specific Tracker Inspection</b></p> <p>Tracker manufacturers will have specific requirements for inspections, testing, service, and documentation. Typical maintenance or startup requirements for tracker systems include:</p>			
31.	Lubricate tracker by inserting grease with grease gun into appropriate grease caps per manufacturer maintenance recommendation.		
32.	Check voltages inside the controller box.		
33.	Use a digital level to check the calibration and positioning of the inclinometers.		
34.	Check array for signs of parts hitting or rubbing other parts.		
35.	Remove vegetation that is near the drive shaft or moving components.		
36.	Check wind-stow operation.		
20.	Communicate completion time to facility manager and CMMS Administrator.		



<b>Section 11: Procedure Approval</b>	<i>A Dry Run of the procedure should be conducted with those that will be performing the work to ensure nothing is missed.</i>		
Dry Run Performed (Physical Walkthrough)	DATE:	TIME:	
Facility Manager Approval	NAME:	TITLE:	DATE:
Craft Manager Approval	NAME:	TITLE:	DATE:
Safety Coordinator Ap- proval	NAME:	TITLE:	DATE: