

Functional Performance Test

[Project Name]

System: **Chilled Water**

Service: **Chilled Water Loop**

<i>Functional Performance Test</i>	<i>Pass</i>	<i>Fail</i>	<i>Remarks</i>
FPT Test Prerequisites	----	----	-----
Occupied schedule is 24/7			
Power-Fail-Restart	----	----	-----
Command system temp control valve open			
Command system bypass valve closed			
Shut off power to VFD's			
Shut off power to CW control panel			
Verify loss of comm at OWS			
Verify system temp control valve fails closed			
Verify system bypass valve fails open			
Restore power (VFD first then control panel)			
Verify single CW pump restarts			
Original DP set point is maintained			
Release control valve overrides			
Pump Lead/Lag and alarms	----	----	-----
Record lead pump			CWP-1/CWP-2/CHP-3
Record lag pump			CWP-1/CWP-2/CHP-3
Record stand-by pump			CWP-1/CWP-2/CHP-3
Record CWP-1 run time hours			___ Hrs
Record CWP-2 run time hours			___ Hrs
Record CWP-3 run time hours			___ Hrs
Record lead/lag switch over set point			750 Hrs
Verify status of lead CW pump			
Shut off lead CW pump at disconnect			
Verify rotation as pump slows down			
Verify lead pump loses status			
Record time until alarm is generated			
Record time until lag pump starts			
Verify status of lag CW pump			
Lag CW pump ramps up and maintains DP			
Turn on lead CW pump at disconnect			
Rotate lead/lag			
Verify status of lead CW pump			
Shut off lead CW pump at disconnect			
Verify rotation as pump slows down			
Verify lead pump loses status			

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Record time until alarm is generated			
Record time until lag pump starts			
Verify status of lag CW pump			
Lag CW pump ramps up and maintains DP			
Turn on lead CW pump at disconnect			
Pump Control (Winter)			
	----	----	OA-T < 44°F
Record CW system DP			___ PSI
Record CW system DP set point			___ PSI
Record VFD speed			___ Hz
CW bypass valve position			___ % Bypass
Raise the CW DP set point by 1 PSI			
CWP maintains new DP set point			
Record VFD speed			___ Hz
Reduce the CW DP set point by 2 PSI			
CWP maintains new DP set point			
Record VFD speed			___ Hz
Release overrides			
Pump Control (Summer)			
	----	----	OA-T > 50°F
Record CW system DP			___ PSI
Record lead pump VFD speed			___ Hz
Record lag pump VFD speed			___ Hz
CW bypass valve position			___ % Bypass
Raise the CW DP set point by 1 PSI			
CWP maintains new DP set point			
Reduce the CW DP set point by 2 PSI			
CWP maintains new DP set point			
Simulate reduced call for cooling			
VFD speeds reduce below 20 Hz			Two pumps
One CWP shuts down			
Simulate further reduction call for cooling			
VFD speed reduces below 20 Hz			One pump
System bypass valve maintains CW DP			
Simulate an increased call for cooling			
VFD speed increases to 60 Hz			One pump
Lag pump starts			
Release overrides			

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Normal Winter Operation			
Simulate the OA-T < 44°F	----	----	-----
Simulate the building SCW-T < 60°F			
Verify system temperature control valve remains closed			
Verify only one CWP is running			
Simulate reduced cooling demand			
VFD reduces below 20 Hz			
System bypass valve maintains CW DP			
Simulate the building SCW-T > 60°F			
System temperature control valve maintains building CWS-T at 55°F			
Normal Summer Operation			
Simulate the OA-T > 50°F	----	----	-----
Record building CWS-T set point			42°F
Record system temp control valve position			___ % Open
Simulate the CWS-T below set point			
System temp control valve opens			
Simulate the CWS-T above set point			
System temp control valve closes			
Release all overrides			

Record BAS Values			
Allow unit to stabilize for temperature control			
Chilled water differential pressure penthouse			___ PSI
Chilled water differential pressure set point			___ PSI
Building chilled water supply temperature			___ °F
Building chilled water return temperature			___ °F
System chilled water supply temperature			___ °F
System chilled water return temperature			___ °F
Chilled water differential pressure basement			___ PSI
System temperature control valve position			___ % Open
System bypass valve			___ % Bypass
CWP-1 status			On/Off
CWP-2 status			On/Off
CWP-3 status			On/Off

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