



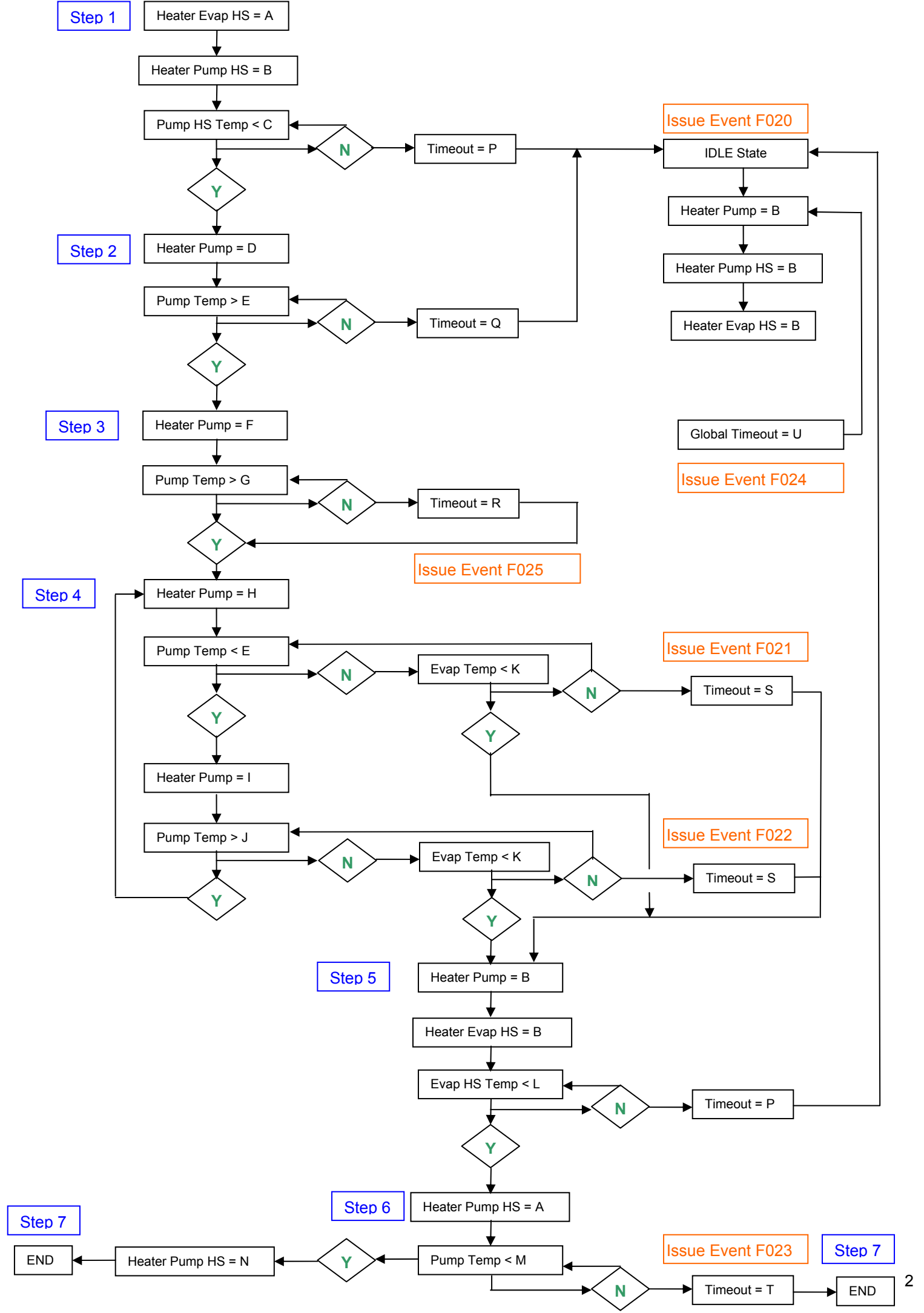
Technical Note

Cooler Recycle Command List Specification
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This document gives the flowchart and parameter specification for the Automatic Cooler Recycle Command List.

Version 4.11 for use in ILT test PFM5



Parameters for Cooler Recycling Using the PRIME Instrument Side

Param	Description	Setting	Current	Voltage	Hex	Dec
A	Heater Heat Switch ON (during Recycling)	0.8 mW	1.4 mA	0.56V	0x0DEB	3563
B	Heaters OFF	0 mW	0.0 mA	0V	0x0000	0
C	Pump Heat Switch – Actuation Temperature	11.98 K	-	-	0xBFBE	49086 -16450
D	Heater Pump Dissipation 1	400 mW	31.54 mA	12.7V	0x0A25	2597
E	Pump Temperature Condensation 1	45.3K	-	-	0x8CA6	36005 -29531
F	Heater Pump Dissipation 2	130mW	17.98mA	7.23V	0x05C9	1482
G	Pump Temperature Condensation 2	45.4K	-	-	0x8C7E	35965 -29571
H	Heater Pump Dissipation 3	30mW	8.639mA	3.47V	0x02C8	712
I	Heater Pump Dissipation 4	75mW	13.659mA	5.49 V	0x0465	1125
J	Pump Temperature Condensation Threshold	45.4K	-	-	0x8C7E	35965 -29571
K	Evap Temperature Condensation	2 K	-	-	0x7ECB	32459
L	Evaporator Heat Switch Actuation Temperature	14.96K	-	-	0xB5A8	46504 -19032
M	Pump Temperature Threshold	2 K	-	-	0xEFCC	61388 -4148
N	Heater Heat Switch ON (during Recycling)	0.42 mW	1.022 mA	0.41V	0x0A2A	2602
O	Loop Sampling (sec)	10 sec	-	-	10	10
P	Heat Switch Timeout ² (min)	½ hr	-	-	30	30
Q	Pump Heating Timeout 1 ² (min)	1hr	-	-	60	60
R	Pump Heating Timeout 2 ² (min)	1/2hr	-	-	30	30
S	Evaporator Timeout ² (min)	1 hr	-	-	60	60
T	Pump Cooling Timeout ² (min)	1hr	-	-	60	60
U	Global Timeout ¹² (min)	2.5 hr	-	-	150	150

Parameters for Cooler Recycling Using the REDUNDANT Instrument Side

Param	Description	Setting	Current	Voltage	Hex	Dec
A	Heater Heat Switch ON (during Recycling)	0.8 mW	1.4 mA	0.56V	0x0DEB	3563
B	Heaters OFF	0 mW	0.0 mA	0V	0x0000	0
C	Pump Heat Switch – Actuation Temperature	12 K	-	-	0xBEA8	48808 -16728
D	Heater Pump Dissipation 1	400 mW	31.54 mA	12.7V	0x0A25	2597
E	Pump Temperature Condensation 1	45.3K	-	-	0x873D	34621 -30915
F	Heater Pump Dissipation 2	130mW	17.98mA	7.23V	0x05C9	1482
G	Pump Temperature Condensation 2	45.4K	-	-	0x8717	34582 -30954
H	Heater Pump Dissipation 3	30mW	8.639mA	3.47V	0x02C8	712
I	Heater Pump Dissipation 4	75mW	13.659mA	5.49 V	0x0465	1125
J	Pump Temperature Condensation Threshold	45.4K	-	-	0x8717	34582 -30954
K	Evap Temperature Condensation	2 K	-	-	0x7EED	32493
L	Evaporator Heat Switch Actuation Temperature	15K	-	-	0xB771	46961 -18575
M	Pump Temperature Threshold	2 K	-	-	0xEE1F	60959 -4577
N	Heater Heat Switch ON (during Recycling)	0.42 mW	1.022 mA	0.41V	0x0A2A	2602
O	Loop Sampling (sec)	10 sec	-	-	10	10
P	Heat Switch Timeout ² (min)	½ hr	-	-	30	30
Q	Pump Heating Timeout 1 ² (min)	1hr	-	-	60	60
R	Pump Heating Timeout 2 ² (min)	1/2hr	-	-	30	30
S	Evaporator Timeout ² (min)	1 hr	-	-	60	60
T	Pump Cooling Timeout ² (min)	1hr	-	-	60	60
U	Global Timeout ¹² (min)	2.5 hr	-	-	150	150

Note 1: A global timeout variable should be implemented – it should stop the script U minutes after the first command has been sent should the script still be running.

Note 2: All timeouts are now specified in time rather than number of sample loops

Note 3: The minimum “Loop Sampling” resolution is 1 sec.

Note 4: When using temperature as a condition, remember that all sensors temperature varies inversely with resistance (except for the evaporator sensor ‘SUBKTEMP’ which temperature decreases as its resistance decreases). As the resistance is the value being checked by the VM, the < and > conditions must be set to account for these features.

Note 5: Note that when the recycling is performed on the redundant side, the STEP numbers don’t come up.