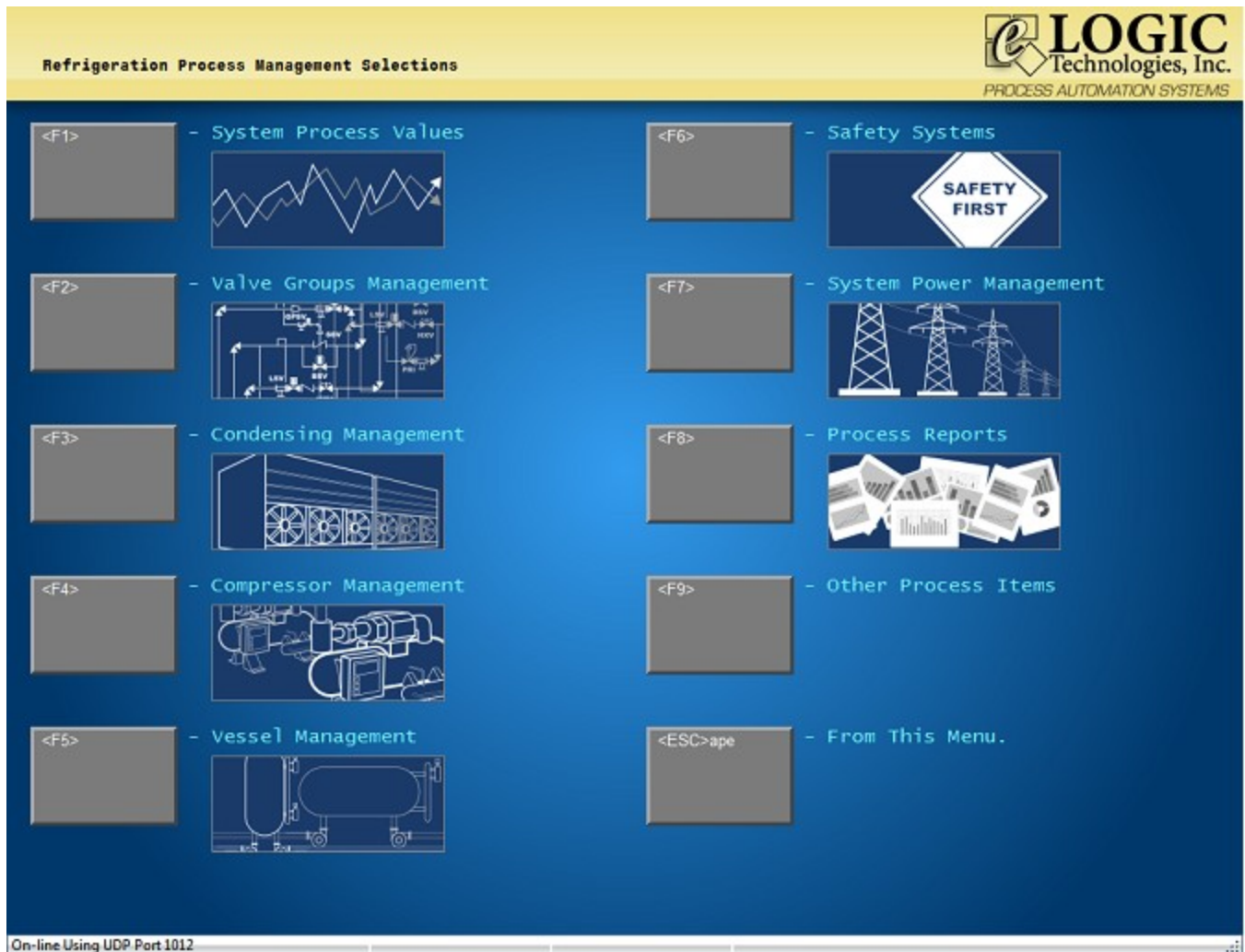


High Rez Refrigeration System Adder Package Operations

Publication - 00000027

Version 1.4.5



Refrigeration Process Management Selections Menu

Key Sequence: <F1> Process Overview From Main Menu

The **Refrigeration Process Management Selections Menu** allows user selection of all areas of your refrigeration system. Areas include your system process values, valve groups management, condensing management, compressor management, vessel management, safety systems, system power management, process reports and other process items used on the system. All refrigeration control views are available from this menu selection.

The following button descriptions outline more detailed information on selections:



System Process Values selection displays all analog or variable value information on the system. Through this selection the system operator may set alarm parameters and signal tracing information. Also single analog trending is available.



Valve Groups Management enters monitoring and control settings areas for all refrigeration control groups. Valve groups include evaporator control groups, chiller control groups and others



Condenser Management allows the operator to change high pressure discharge settings and modify pump and fan sequences on system. Cell definition and additions are also handled through this selection.



Compressor Management selection provides operator control for system compressors. Each compressor, independent of manufacturer, is displayed and made to operate in the same manner. Compressors overrides and sequencing setup are also contained in this section.



Vessel Management controls the heart of the system. System pressure settings entered here are transmitted to compressors assigned to each vessel pressure system. Other control area such as liquid level and pump controls are entered here also.



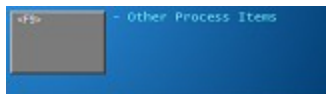
Safety Systems contains such items as refrigerant sensor monitoring, emergency stop systems, high pressure cutout systems and any sub level system stop definitions.




System Power Management displays all system billing meter attached to the system. This area show instantaneous indicators of electrical conditions and usage after operator changes to the refrigeration process.



Process Reports displays all system reports available for printing that only apply to the refrigeration process.



Other Process Items allows system operators interface to special programming for the system. Any program written outside the system software standard will be found here.

System Analog Status Display						
					PROCESS AUTOMATION SYSTEMS	
ID	Signal	Current	===== 24 Hrs ===== ---- High ----- Low	Units		
1	Disch Pres Set-Point 1	0.00	Not Active	Psig	<F1> Analog	
2	System Disch Pres 1	2.80	3.00 2.80	Psig		
3	Disch Pres Rise Rate 1	0.00	Not Active	Psi/Min		
4	-35F LLTR Suct Press.	-14.69	-14.69 -14.69	Psig	<F2> Valve Groups	
5	-35F LLTR Pump Pres.	8.30	8.30 8.30	Psig		
6	-35F Press. Rise Rate	0.00	0.00 0.00	Psi/Min		
7	-25F LTR Suct Press	14.98	14.98 14.98	Psig	<F3> Condensers	
8	-25F LTR Pump Pres.	37.98	37.98 37.98	Psid		
9	-25F Press. Rise Rate	0.00	0.00 0.00	Psi/Min		
10	+18F HTR Pump Diff	34.60	34.60 34.60	Psid	<F4> Compressors	
11	+18F HTR Suct Press	11.60	11.60 11.60	Psig		
12	+18F Press. Rise Rate	0.00	0.00 0.00	Psi/Min		
13	-25F LTU Suct Press	16.72	16.72 16.72	Psig	<F5> Vessels	
14	-25F Press. Rise Rate	0.00	0.00 0.00	Psi/Min		
15	Water Tank Level	10.26	10.26 10.26	Ft.		
16	Water Tank Level	30.21	30.21 30.21	%Full	<F6>	
17	Ambient Humidity	62.57	62.57 62.57	%RHp		
18	HPR Level Probe	86.99	86.99 86.99	%Full		
19	Energy Center Low AE-1	-0.22	-0.22 -0.22	PPM	<F6>	
20	Energy Ctr. High AE-2	-15.26	-15.26 -15.26	PPM		
21	Penthouse 1 NH3 AE-3	-0.09	-0.09 -0.09	PPM		
22	Penthouse 2 NH3 AE-4	-0.12	-0.12 -0.12	PPM	<F6>	
23	Penthouse 3 NH3 AE-5	-0.15	-0.15 -0.15	PPM		
24	Penthouse 4 NH3 AE-6	-0.09	-0.09 -0.09	PPM		
Select Item From This Page.					26 Pages	Page: 1 Scan
<ESC>ape					<PgUp>	<PgDn>
					<P>age	

On-line Using UDP Port 1012


System Analog Status Display

Key Sequence: <F1> System Process Values From Refrigeration Process Management

The **System Analog Status Display** listing groups all analog values on the system for operator viewing. More information on this area may be found in the system core database description manual. These values such as temperature, pressures, refrigerant sensors and tank levels are displayed independent of the refrigeration equipment they are attached to.

Depending upon your system, you may have a large number of analog measuring devices which cannot be displayed on one text page. To view the remaining pages, use the mouse and left click the page button at the bottom of the page.

Refrigeration Valve Group Status



Grp	Description	Tag	Temp. Setpoint	Temp. Current	F n Status	Secs.
1	-20F Freezer	BLAST110	-20.00	-20.31	Off Cycle	N/A
2	-20F Freezer	BLAST1-2	-20.00	-21.75	* Pump Out	215
3	-20F Freezer	E3 PH-1	-10.00	-10.51	Off Cycle	N/A
4	-10F Freezer	E4 PH-1	-11.00	-11.68	* Cooling	N/A
5	-10F Freezer	E5 PH-2	-14.00	-14.85	* Cooling	N/A
6	-10F Freezer	E6 PH-2	-11.00	-13.04	* Off Cycle	N/A
7	-10F Freezer	E7 PH-2	-10.00	-10.58	* Cooling	N/A
8	-10F Freezer	E8 PH-2	-12.00	-12.28	* Cooling	N/A
9	-10F Freezer	E9 PH-3	-11.00	-11.17	Off Cycle	N/A
10	-10F Freezer	E10 PH-3	-10.00	-10.62	Off Cycle	N/A
11	-10F Freezer	E11 PH-3	-10.00	-11.55	* Cooling	N/A
12	-10F Freezer	E12 PH-3	-12.00	-13.62	Off Cycle	N/A
13	-10F Freezer	E13 PH-4	-10.00	-11.33	* Cooling	N/A
14	-10F Freezer	E14 PH-4	-10.00	-11.02	* Cooling	N/A
15	-10F Freezer	E15 PH-4	-10.00	-11.56	Off Cycle	N/A
16	-10F Freezer	PH4	-10.00	-10.11	* Cooling	N/A
17	-10F Freezer	E17 PH-5	-10.00	-10.53	Off Cycle	N/A
18	-10F Freezer	E18 PH-5	-10.00	-10.37	Off Cycle	N/A
19	-10F Freezer	E19 PH-5	-10.00	-10.79	Off Cycle	N/A
20	-10F Freezer	E20 PH-5	-10.00	-11.72	* Cooling	N/A
21	+35F Dairy	E21 PH-6	35.00	34.18	Off Cycle	N/A
22	+35F Dairy/Deli/Dry	E22 PH-6	35.00	34.08	* Cooling	N/A
23	+35F Dairy/Deli/Dry	E23 PH-6	35.00	34.94	* Cooling	N/A
24	+35F Dairy/Deli/Dry	E24 PH-6	35.00	34.24	Off Cycle	N/A
25	+35F Dairy/Deli/Dry	E25 PH-7	35.00	35.02	Off Cycle	N/A

(Next Startup In 0.0 Seconds)
 (Next Frost Init 0.0 Minutes)

%<D>uty <M>od Info <G>lobal

0 HG 0 GL 0 EL 0 Air Defrost Scanning 16

Press <ESC> For Menu or <1-2> For Page Number. Page: 1

<ESC>ape <1> <2>

Defrost <L>og

<F1> Analog

<F2> Valve Groups

<F3> Condensers

<F4> Compressors

<F5> Vessels

<F6> Safety

On-line Using UDP Port 1012

Refrigeration Valve Group Status

Key Sequence: <F2> Valve Groups Management From Refrigeration Process

This selection is used to monitor all single and multi-valved air units by displaying the valve group number, description, current temperature, control set point, current zone temperature, fan status, valve group status, and seconds remaining in any defrost cycle. If more than one page is available, selection buttons are provided across the bottom of the screen for page selection. Detailed group information may be displayed by pointing and selecting with the system mouse or by pressing <F1> and entering the group number when prompted. This information is described on the following page. At the top of the screen you will see the time remaining before the next group is scheduled to start as well as the number of groups currently in defrost cycle. The scanning unit number currently being controlled is also displayed in this area.

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PROCESS AUTOMATION SYSTEMS

Refrigeration Valve Group Editor

F1 Description: (-10F Freezer) Group Tag: E4 PH-1 Safety System: 0 Defrost.

F2 Defrost Type Code: 1 - Hot Gas Defrost SUCT ENG CLOSED

F3 ... Unit Activate Signal #: 0 (Not Present)

F4 Analog Control ID: 143 (E4 Zone Temp) Follow: 0

F5 ... Status During Offcycle - Fans: Pump Out Suction: Opened Liquid: Closed

F6 ... VGroup Automation Mode: Automatic Operation

F7 Temperature Setpoint: -11.00 Deadband: 2.00

F8 .. Humidity Setpoint (%RH): n/a Deadband: n/a

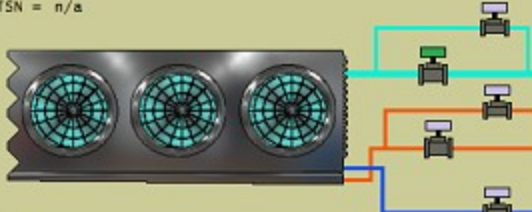
F9 . Reset (Cooling) Run Time: 3441.96 Hrs.

F10 Group Service Vessel: -25F REC Leak Sig: 0 Level: 0.0

F11 Fan Startup Delay: 0 Secs. No Shutdown On Leak Sensor

Group Number: 4 No Frost Sensor Status: Cooling 14:16:12

Defrost TSN = n/a



Current Temperature: -11.67

Run Verified
Fans: Running VFD: 49.7 %

Electrical
Primary Secondary
LSV: Off Off
SPSV1: Off Off
SHGSV: Off Off
HGSV: Off Off
BSV: Off Off

Inactive Inactive

<ESC>ape <R>e-Heat Dehu<m>idify <S>cheduling <PgUp> <PgDown>

On-line Using UDP Port 1012

Refrigeration Valve Group Editor

Key Sequence: <F2>Refrigeration Valve Group Status Screen, Click Group #

Detailed group information is displayed if selected from the valve group status screen. This screen contains all the setup and operational parameters for the selected valve group allowing operator override of all conditions.

(F1) - **Description** contains the group of air unit process area, name, and group tag.

(F2) - **Defrost Type Code** selects the type of defrost cycle to execute on valve groups, choices are as follows:

- <1> - Hot Gas Defrost Suction Eng Closed
- <2> - Air Defrost
- <3> - Hot Gas Defrost Suction Eng Open
- <4> - Electric Defrost
- <5> - HG Defrost With Fans Suction Eng Closed
- <6> - HG Defrost With Fans Suction Eng Open
- <7> - Remote Control
- <8> - HG Defrost Suction Eng Closed (cks)
- <9> - Glycol Defrost

(F3) - **Unit Activate Signal #** designates which input will allow the unit to operate in automatic temperature control, if active. If no valve is present this option is inactive.

(F4) - **Analog Control ID** this is the analog temperature sensor ID number that will control the valve group.

(F5) - **Status During Offcycle - Fans** sets fan condition codes during non-cooling modes.

Fans <A> Active

Fans <O> Off

<C> ycle 4/40 on/full-speed (4 of 40 minutes)

<P>ump out fan off delay

Change <S>uction

-Changes suction valve during off cycle to open or close.

Change <L>iquid

-Changes liquid valve during off cycle to open or close.

(F6) - **V Group Automation Mode** sets the current mode of the entire valve group. This selection displays a window allowing of:

<A> - automatic operation control unit by temperature.

<O> - forced off operation pump down all the time.

<X> - forced on operation refrigerate all the time.

In the forced on or automatic modes, defrost cycles are executed. While in the forced off mode, defrost cycles are skipped.

(F7) - **Temperature Set Point** sets the desired temperature to maintain the selected valve group.

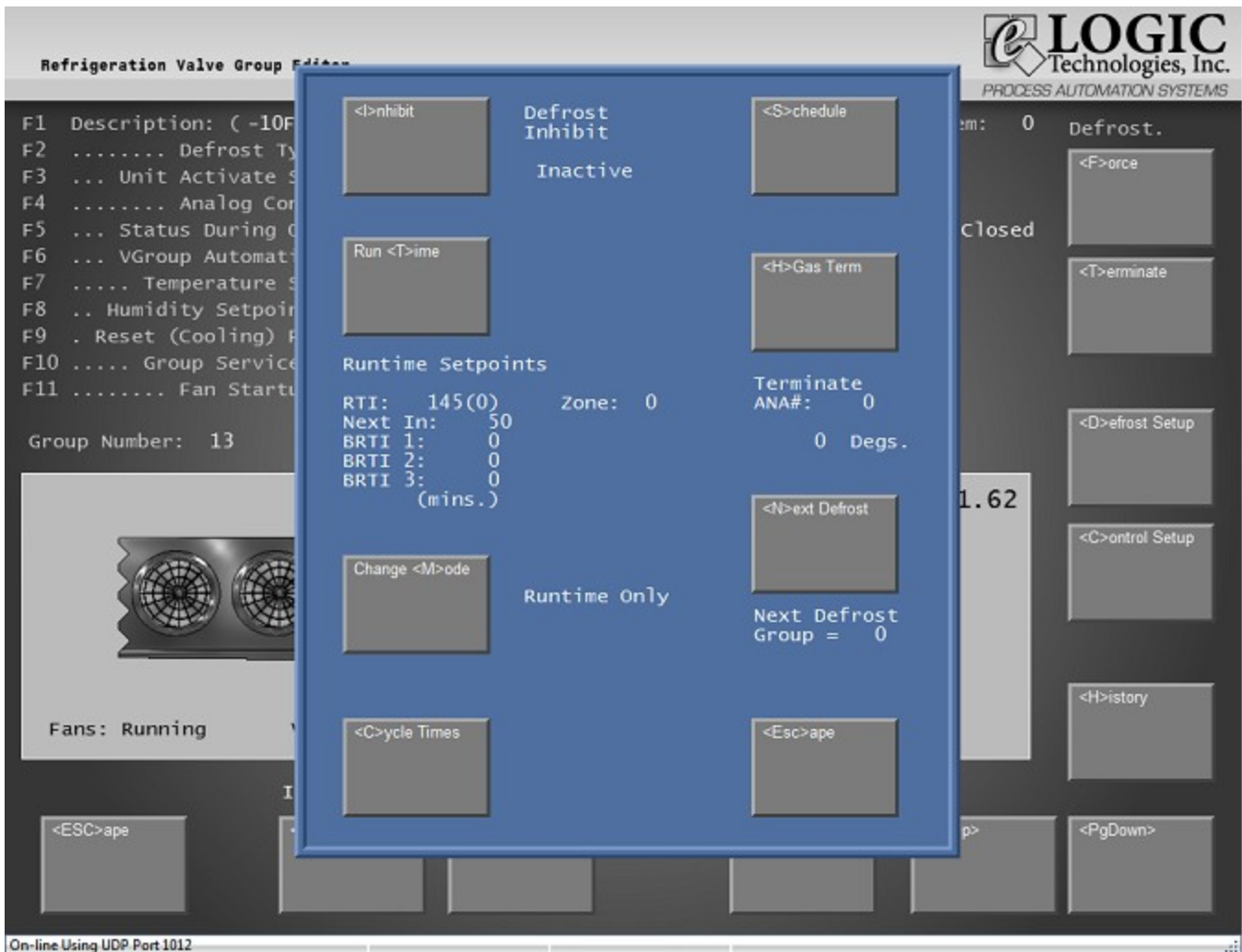
(F8) - **Humidity Set Point (%RH)** this selection allows you to control the humidity in a room. If you want to add more humidity you have the ability to turn a pump on.

(F9) - **Reset (cooling) Run Time** this selection allows you to manually reset the accumulated cooling run time of a valve group.

(F10) - **Group Service Vessel** associates the selected valve group with the engine room vessel. This association allows for sub-system shutdown control and liquid circulation control based on valve group activity. If the manual valves are changed to connect the unit to another system vessel, this entry should be changed to reflect the new association.

(F11) - **Fan Start Up Delay** this selection allows the operator to delay air unit fans from starting when the valve group transitions from off-cycle to cooling mode. The delay allows coils, which may have collected moisture, to re-freeze before fans are started.

Note: **run verified** means the system will complete the operation for you, **run un-verified** means the operator will need to manually perform chosen operation.



<D>efrost Setup

Key Sequence: Refrigeration Valve Group Setpoints Schedule Editor

This selection will allow an operator to set up defrost cycles for each valve group.

<I>nhibit - This selection allows the operator to stop the scheduled and runtime defrost cycles for the selected unit. Note the text under the 'defrost inhibit' text will display the current inhibit mode of operation.

Run <T>ime - This selection allows the operator to set the runtime period before initiating a defrost cycle for each valve group. The operator must select a specified time period in minutes and store this value in RTI storage 'Run Time Interval'. The remaining time is then displayed under next in zone - only allows you to run 1 BRTI cycle at a time. BRTI 'Blast Run Time Interval', is available to allow variable defrost intervals after a blast cell is started. Three blast run time interval settings can be set up between each defrost cycle. Upon defrost execution the next cycle time is placed in the RTI storage area.

Change <M>ode - Allows the operator choose the type of defrost control to apply to the selected valve group, 'runtime', 'BRTI runtime', 'frost sensor', 'scheduled', 'scheduled skip', 'runtime only'.

Refrigeration Valve Group Editor

LOGIC Technologies, Inc. PROCESS AUTOMATION SYSTEMS

F1 Description: (-10F Freezer) Group Tag: E13 PH-4 Safety System: 0 Defrost.
 F2 Defrost Type Code: 1 - Hot Gas Defrost SUCT ENG CLOSED
 F3 ... Unit Activate Signal #: 0
 F4 Analog Control ID: 179
 F5 ... Status During Offcycle - Fans:
 F6 ... VGroup Automation Mode: Autom
 F7 Temperature Setpoint: -10.0
 F8 .. Humidity Setpoint (%RH): n/a
 F9 . Reset (Cooling) Run Time: 615.
 F10 Group Service Vessel: -25F RE
 F11 Fan Startup Delay: 0 Se

Group Number: 13 No Frost Sensor

Cycle Times Sec.
 Cycle Length

Pump Down Cycle 300
 Soft Gas Cycle 120
 Hot Gas Cycle 900
 Coil Dry Cycle 120
 Bleed Off Cycle 180
 Fans Delay 120

<C>hange <Esc>ape

Fans: Running VFD: 0.9 %

SOFT HG Electrical Primary Secondary
 HG LSV: Active Off Off
 SPSV1: Off Off
 SHGSV: Off Off Off
 HGSV: Off Off Off
 BSV: Off Off Off

Inactive Inactive
 <ESC>ape <R>e-Heat Dehu<m>idify <S>cheduling <PgUp> <PgDown>

On-line Using UDP Port 1012

<C>ycle Times

Key Sequence: <D>efrost setup, <C>ycle time

Change <C>cle Time - Allows operator to adjust defrost cycle duration times. Times are entered in seconds.

Pump Down Cycle - De-energizes the liquid feed solenoid valve in cooling mode, allowing all remaining liquid in coil to evaporate before energizing the hot gas valve.

Soft Gas Cycle - Allows the operator to open a small soft gas valve to slowly introduce hot gas in to the system, before opening the hot gas valve. Opening this valve first reduces the likelihood of a damaging pressure shock.


Hot Gas Cycle - Energizes the hot gas solenoid valve and/or hot gas main, if applicable, and de-energizes fans and suction valve for the specified time.

Coil Dry Delay Time - Holds pressure on the coil but de-energizes the hot gas coil.

Bleed Off Cycle - Allows pressure in the evaporator to equalize system suction pressure by opening the bleed valve. It also de-energizes the hot gas, fans, and main suction valves.

Fans Delay - Allows liquid to enter the coil for a specified time before energizing the evaporator fans.

Refrigeration Valve Group Defrost Schedule Editor



Unit:	13	Description:	- E13 PH-4					
Day		Change 1	Change 2	Change 3	Change 4	Change 5	Change 6	
Sunday	Cond: Inactive Time: 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	<E>dit
Monday	Cond: Inactive Time: 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	<PgUp>
Tuesday	Cond: Inactive Time: 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	<PgDn>
Wednesday	Cond: Inactive Time: 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	
Thursday	Cond: Inactive Time: 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	<S>eason
Friday	Cond: Inactive Time: 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	
Saturday	Cond: Inactive Time: 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	Inactive 00:00:00	<Esc>ape

Select Time Slot with Arrow Keys Or Mouse.

On-line Using UDP Port 1012

Refrigeration Valve Group Defrost Schedule Editor

Key Sequence: <D> Defrost setup, <S>chedule

This selection allows the user to program up to six defrost times per day for each valve group. Each day of the week can have a different schedule.

<E>dit - button allows for activating or deactivating a schedule, also allows for setting up a start time in military format.

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Refrigeration Valve Group Defrost Schedule Editor

Unit: 13 Description: -10F Freezer - E13 PH-4

Day	Change 1	Change 2	Change 3	Change 4	Change 5	Change 6	
Sunday	[winter]				ive Inactive Inactive	00 00:00:00 00:00:00	<E>dit
Monday	[summer]				ive Inactive Inactive	00 00:00:00 00:00:00	<PgUp>
Tuesday	[test]				ive Inactive Inactive	00 00:00:00 00:00:00	<PgDn>
Wednesday					ive Inactive Inactive	00 00:00:00 00:00:00	<S>eason
Thursday					ive Inactive Inactive	00 00:00:00 00:00:00	<Esc>ape
Friday					ive Inactive Inactive	00 00:00:00 00:00:00	<Esc>ape
Saturday					ive Inactive Inactive	00 00:00:00 00:00:00	

Schedule ID:

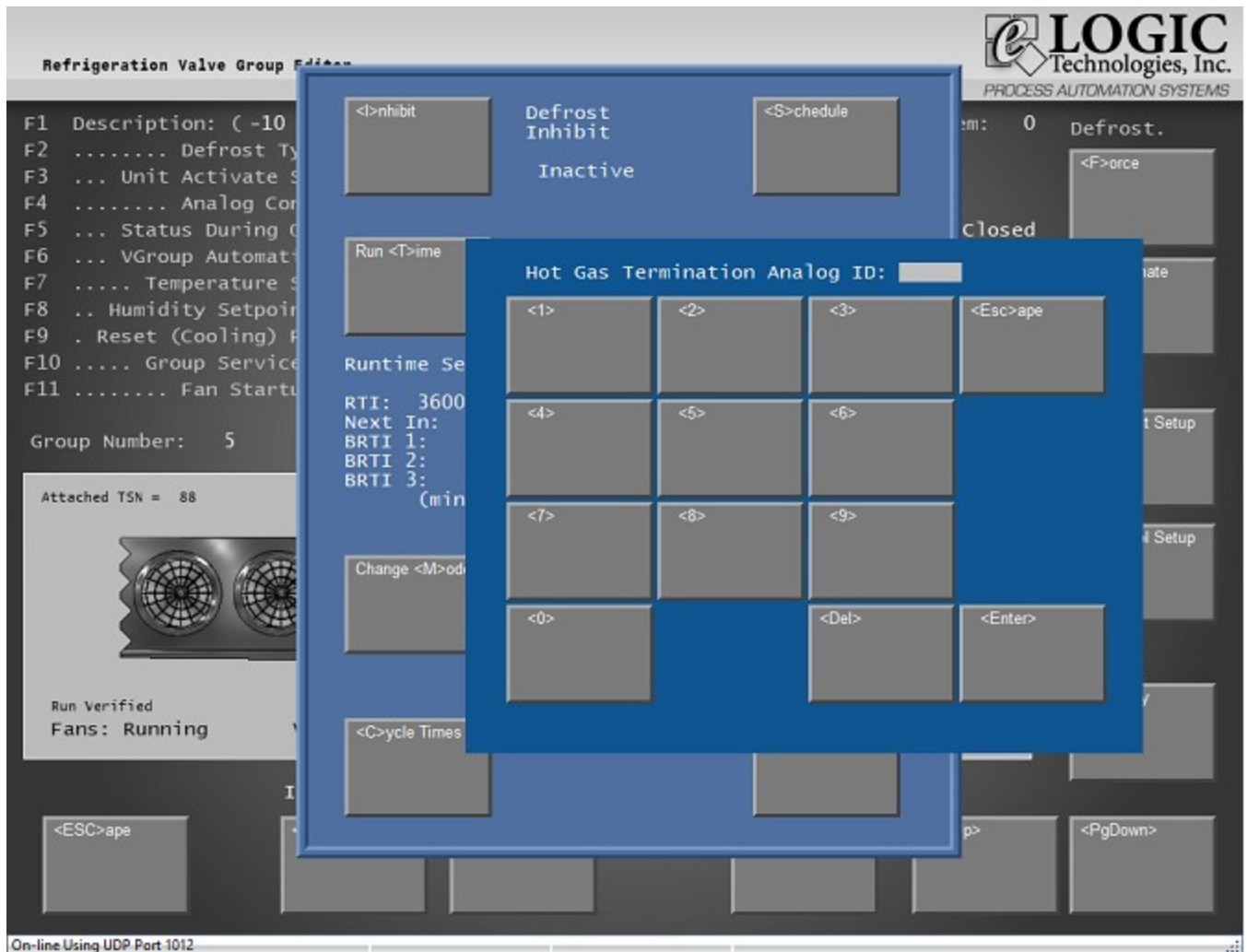
Select Time Slot With Arrow Keys Or Mouse.

On-line Using UDP Port 1012

<S>eason

Key Sequence: <D>efrost setup, <S>chedule, <S>eason

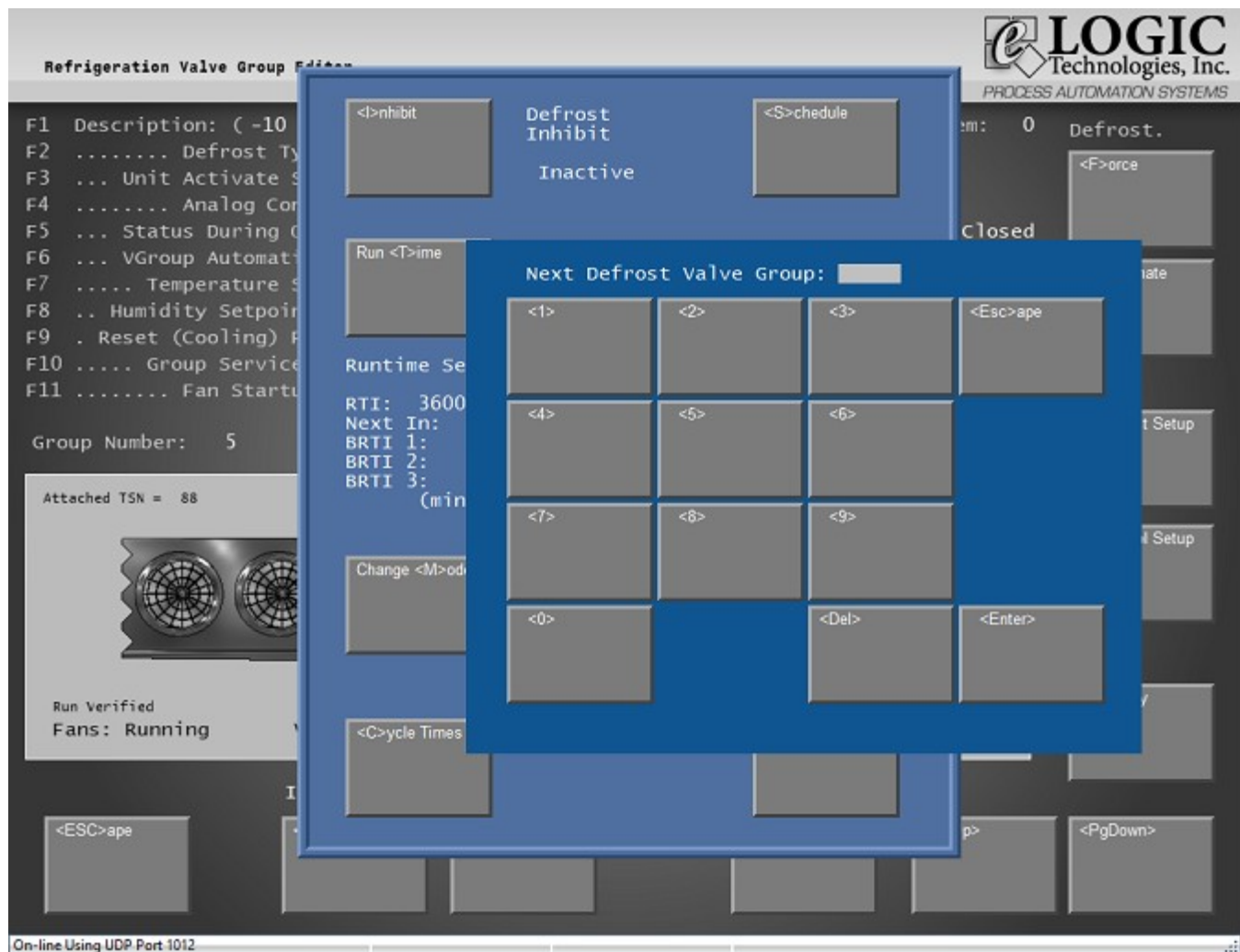
<S>eason - allows you to save or retrieve a defrost schedule that has been setup. This allows the operator the flexibility to run different defrost schedules when ambient temperatures are different.



<H> Gas Term

Key Sequence: <D>efrost setup, <H> Gas Term

<H> Gas Term - allows the operator to program a hot gas termination analog ID# and also a temperature setpoint.

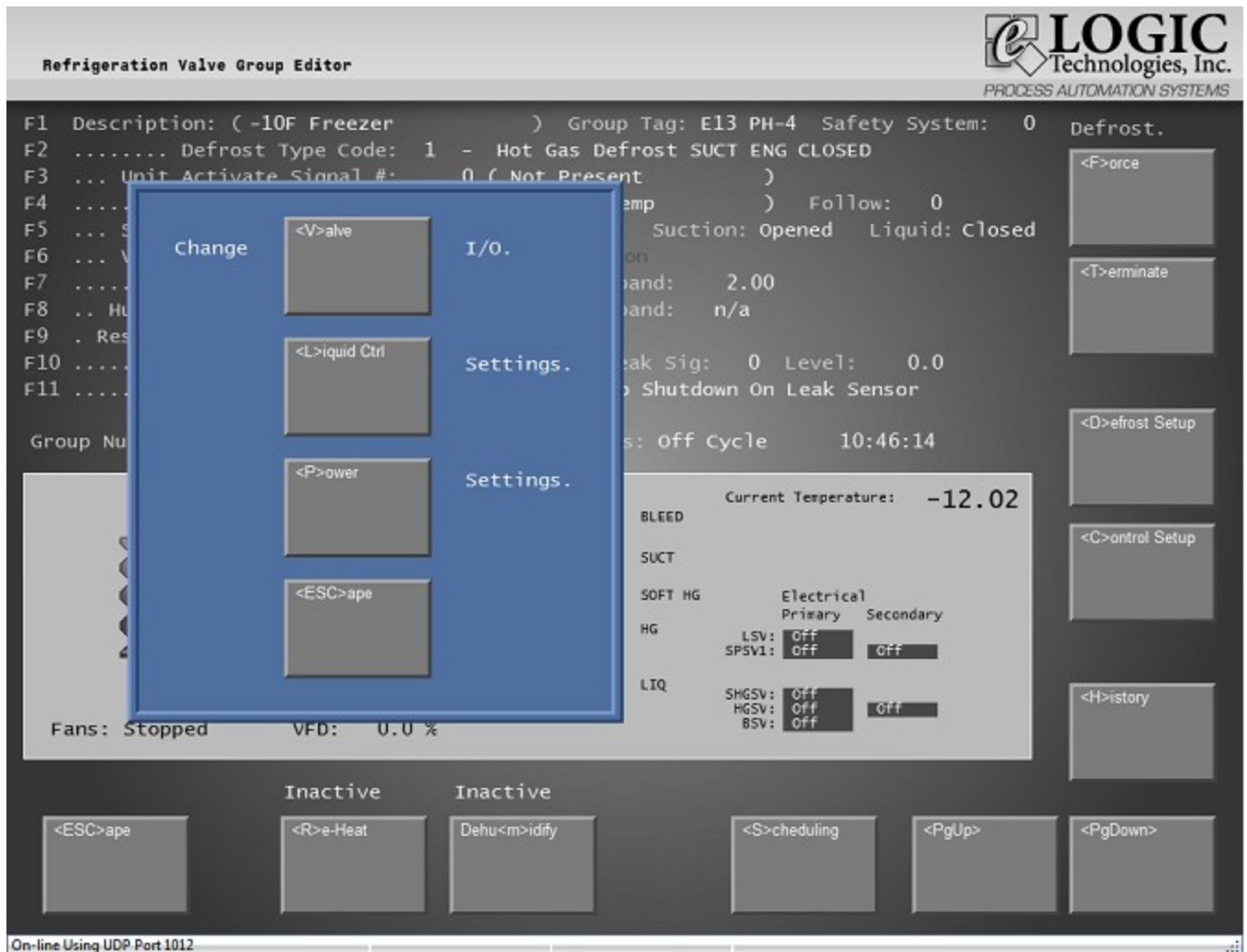


<N>ext Defrost

Key Sequence: <D>efrost setup, <N>ext defrost

<N>ext Defrost allows the operator to select the next valve group to be defrosted.

This is the setup screen for the next evaporator to go into defrost mode.



<C>ontrol Setup

Key Sequence: Refrigeration Valve Group Editor, <C>ontrol Setup

<C>ontrol Setup - allows you to monitor and change all the I/O points associated with the valve group <V>alve I/O, <L>iquid control, <P>ower



Change <V>alve I/O

Key Sequence: Refrigeration Valve Group Editor, <C>ontrol Setup, <V>alve I/O

This screen allows an operator to view or change the various I/O points configured for the valve group, are as follows:

- VFD Control Signal
- VFD Read Back Analog ID
- Status Signal
- Pump Down Signal
- Primary Liquid Signal
- Secondary Liquid Signal
- Primary Suction P1 Signal
- Secondary Suction P1 Signal
- Primary Suction P2 Signal
- Secondary Suction P2 Signal
- Suction (Low Pressure Regulator)
- Primary Soft Hot Gas Signal
- Secondary Hot Gas Signal
- Primary Main Hot Gas Signal

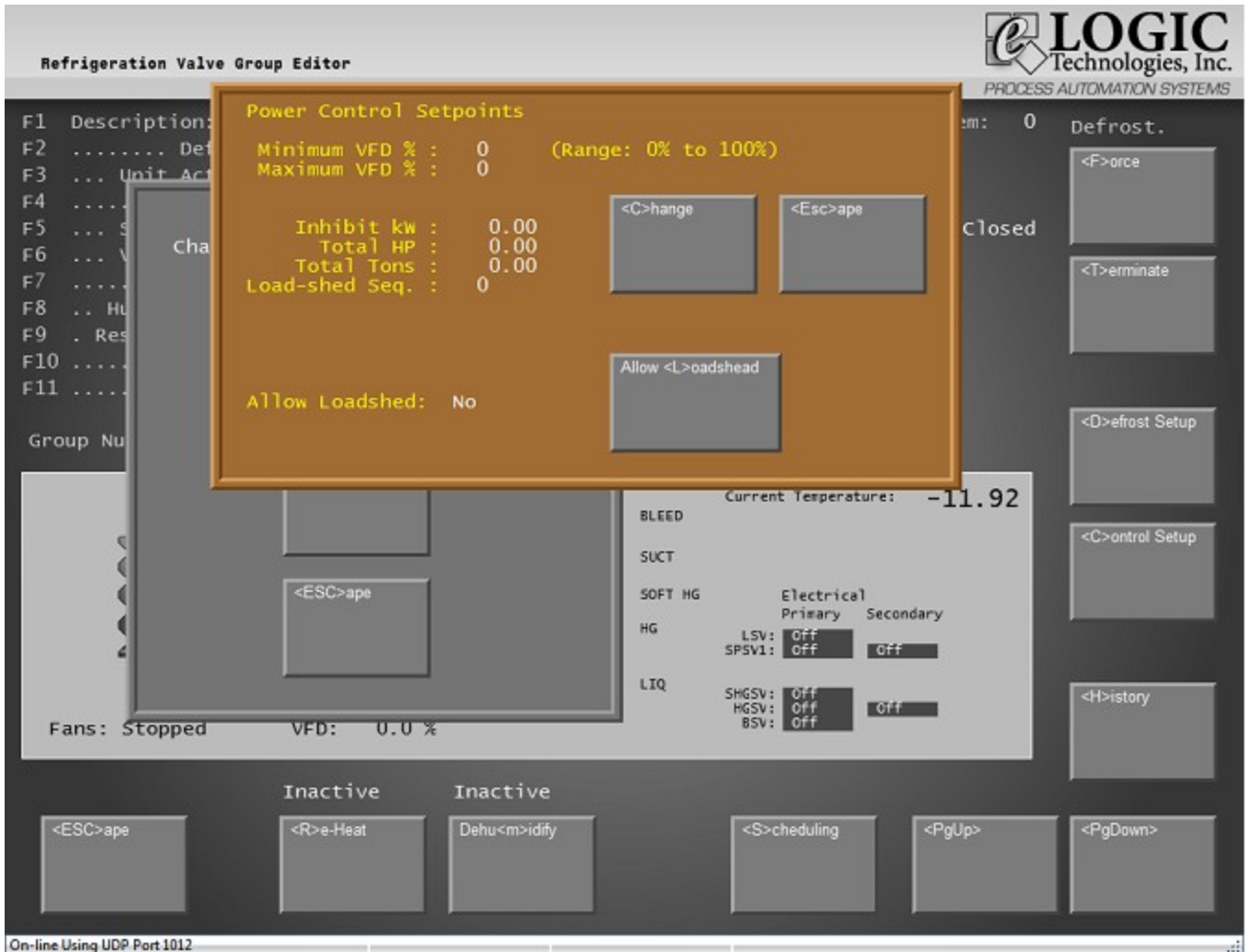
- Secondary Main Hot Gas Signal
- Primary Bleed Signal
- Secondary Bleed Signal
- Main Fans Start 1 Signal
- Main Fans Start 2 Signal
- Main Fans Start 3 Signal
- Main Fans Start 4 Signal
- Main Fans Auxiliary 1 Signal
- Main Fans Auxiliary 2 Signal
- Main Fans Auxiliary 3 Signal
- Main Fans Auxiliary 4 Signal
- Low Speed Fans Start 1 Signal
- Low Speed Fans Start 2 Signal
- Low Speed Fans Start 3 Signal
- Low Speed Fans Start 4 Signal
- Primary Reheat/Dehumidify Signal
- Secondary Reheat/Dehumidify Signal
- Frost Sensor Signal
- Humidifier Signal
- Area % Relative Humidity Analog ID



<L>iquid Control

Key Sequence: Refrigeration Valve Group Editor, <C>ontrol Setup, <L>iquid Cont

<L>iquid Control - gives the operator the ability to allow liquid to flow or not flow based on if the fans have failed. It also allows you to turn the liquid off based on a condition of minus 1/2 DB.



<P>ower Setting

Key Sequence: Refrigeration Valve Group Editor, <C>ontrol Setup, <P>ower

<P>ower setting - allows the operator to control evaporator run sequences based on power consumption. Valve groups can be shed based upon setting up a sequence. The power monitoring feature of the system has to be turned on and running.

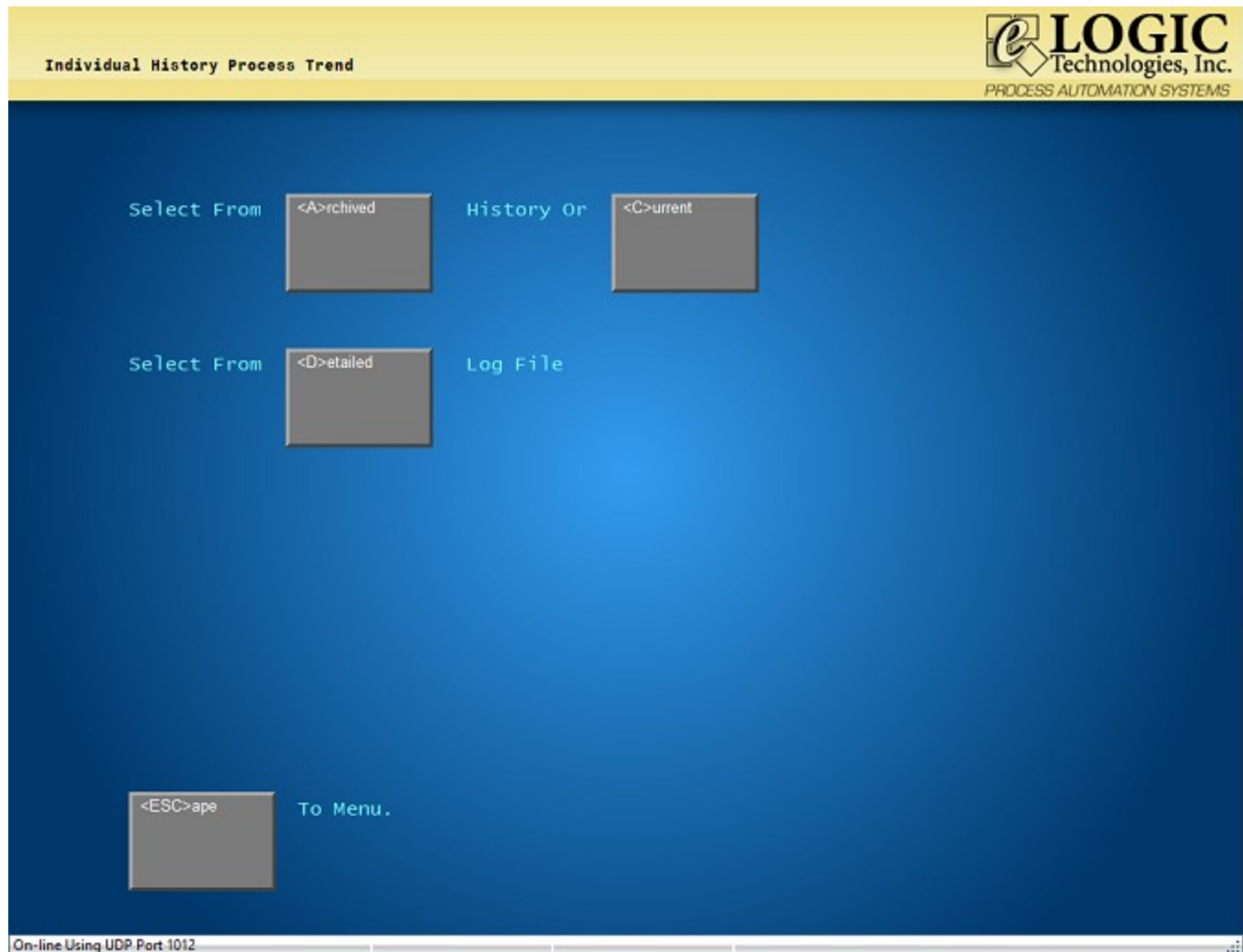
Inhibit KW: this is the max. KW demand set-point for the facility.

Total HP: this is the value of the total HP of the fan motors.

Total Tons: total cooling capacity of the evaporator.

Load-Shed Sequence: valve programmed to remember which loads are shed in which order.

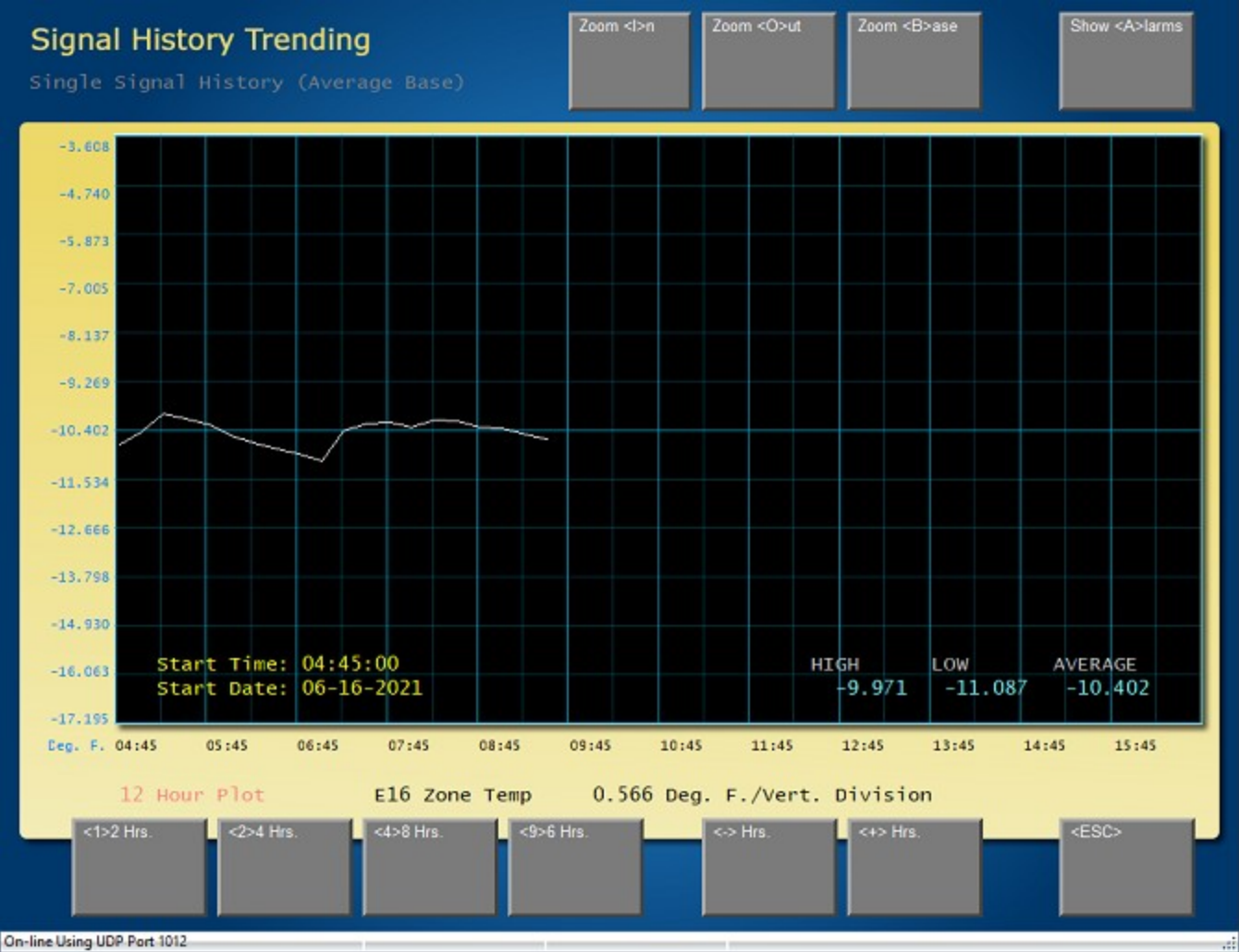
Allow <L>oad-shed: this button allows a valve group to be load-shed or not load-shed.



Individual History Process Trend

Key Sequence: Refrigeration Valve Group Editor, <H>istory

The individual history process trend allows you to view the trend data from previous data that has <A>rchived or stored or select <C>urrent data which will trend in real time. Please see the following page which shows an example of <C>urrent data. In this case "E1 Supply Temperature".



Key Sequence:

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Refrigeration Condensing System Cell Status

Setpoint 140.00 Psig Discharge 139.77 Psig Rise Rate -2.2163 Psi/Min
Water Low Temp Off: Not Active Ambient 47.4 Deg. 62.5 %RH 41.7 WB Deg.

Cell #	Description	WP-1	WP-2	Fan-1	Fan-2	Fan-3	Fan-4	W-Lvl
1	Evapco Cell 1	off	off	off	off	--	--	n/a
5	Evapco Cell 5	On	On	off	off	--	--	n/a

<F1> Analog

<F2> Valve Groups

<F3> Condensers

<F4> Compressors

<F5> Vessels

<F6> Safety

<ESC>ape <N>ext System 1 <S>equence <C>hange Settings <P>urger


On-line Using UDP Port 1012

Refrigeration Condensing System Cell Status

Key Sequence: Refrigeration Process Management Selection Screen, <F3>

Refrigeration condensing system cell status is used to display all system condensing components and the order in which they will sequence to maintain system discharge pressure. Current discharge pressure is continually displayed along with system setpoint. Head pressure control algorithms calculate and display pressure rise rate in pounds per minute. The rise rate determines the system equipment response time.

Refrigeration Condensing System Cell Status



PROCESS AUTOMATION SYSTEMS

Setpoint 140.00 Psig Discharge 131.81 Psig Rise Rate -7.2123 Psi/Min

Water Low Temp Off: Not Active Ambient 47.4 Deg. 62.5 %RH 41.7 WB Deg.

Cell # Description	WP-1	WP-2	Fan-1	Fan-2	Fan-3	Fan-4	W-Lvl
1 Evapco Cell 1	off	off	off	off	--	--	n/a
5 Evapco Cell 5	On	On	off	off	--	--	n/a

Select (Fans) Items In Startup Sequence

<ESC>ape

<C>lear

<P>umps

<F>ans

On-line Using UDP Port 1012

<S>equence

Key Sequence: <F3> - Condensing management, <S>equence

This screen allows you to setup the sequence of the pumps and fans for each condensor.



<C>hange Settings

Key Sequence: <F3> - Condensing Management, <C>hange settings

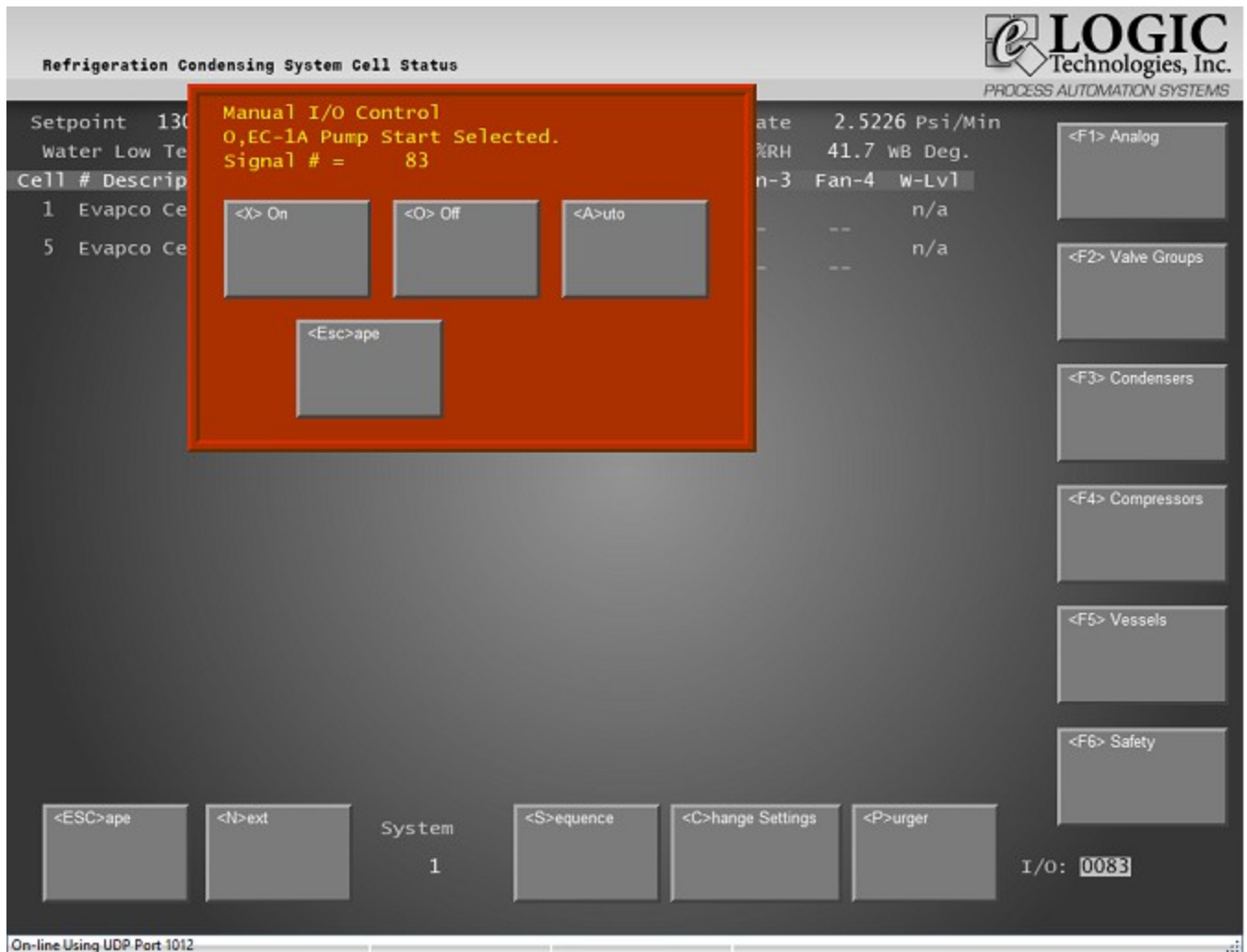
This screen allows you to change the setpoints of each condensor.

Control <S>etpoints - allows the user to configure discharge setpoints.

<M>ain Setpoint - allows the user to configure the control device for the condenser.

<C>ell Setup - this screen shows the current cells defined for the system and also allows for new cells to be configured and added.

Max <D>efrost - this screen allows you to configure the maximum amount of triggered defrosts for hot gas, glycol, electric, and air.



Manual I/O Control

Key Sequence: <F3> Condensing Management, Click On Water Pump Or Fan

Click on the water pump or fan that you want to control. In the example above EC-1A pump was selected, you can turn the pump <X>on, <O>off or put it back into "<A>uto" mode. This can also be done with a fan.



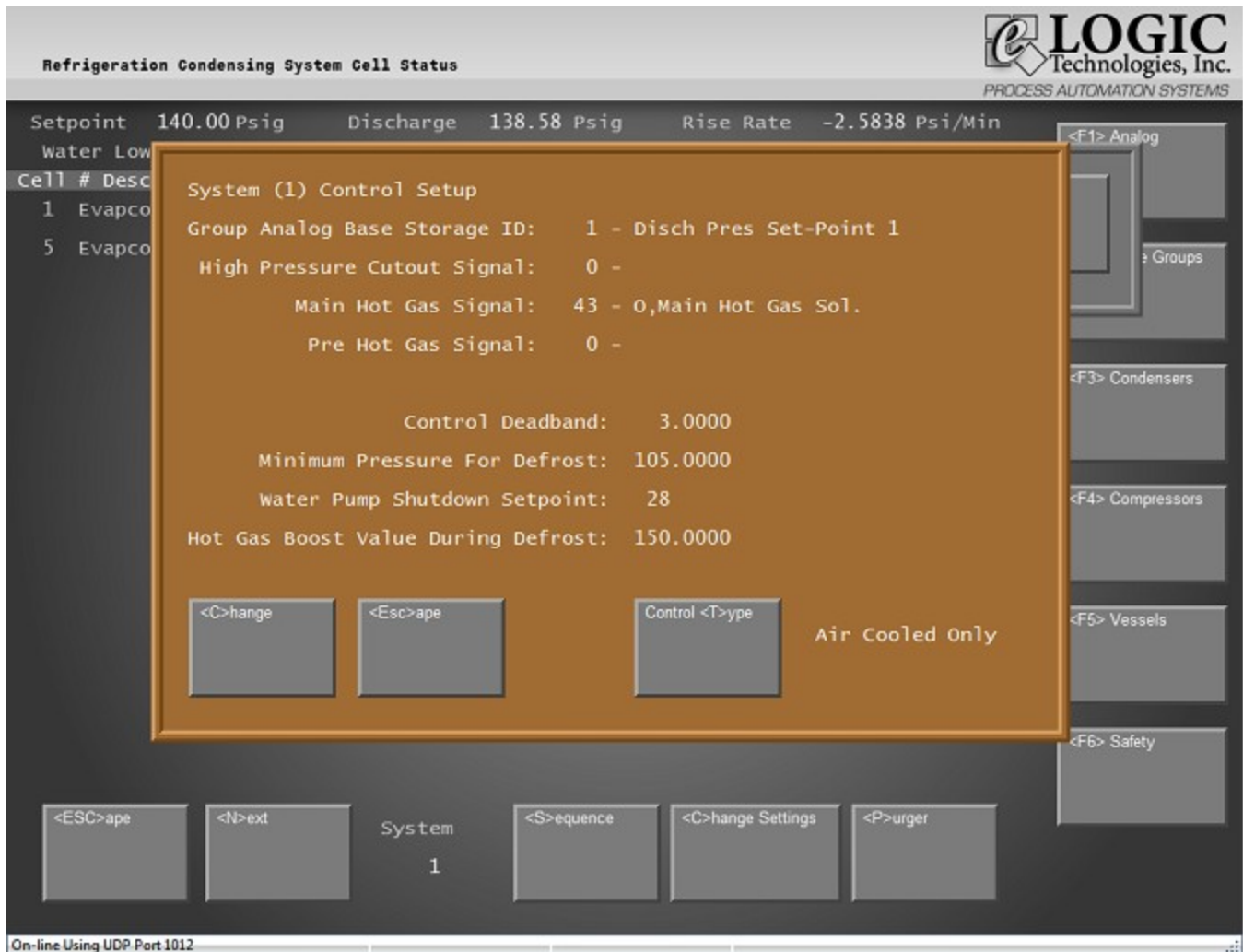
Control <S>etpoints

Key Sequence: <F3> - Condensing Management, <C>hange Settings, Control <S>et

This screen allows you to change your "discharge control setpoint", "high pressure cutout setpoint", "condensing temperature above WB differential", "maximum head pressure adjustment limit", "high and low".

You can also activate or deactivate wet bulb.

Please Note: in order for the WB approach to work, a working RH (relative humidity) sensor and a WB (wet bulb) temperature sensor have to be working.



<M>ain Setup

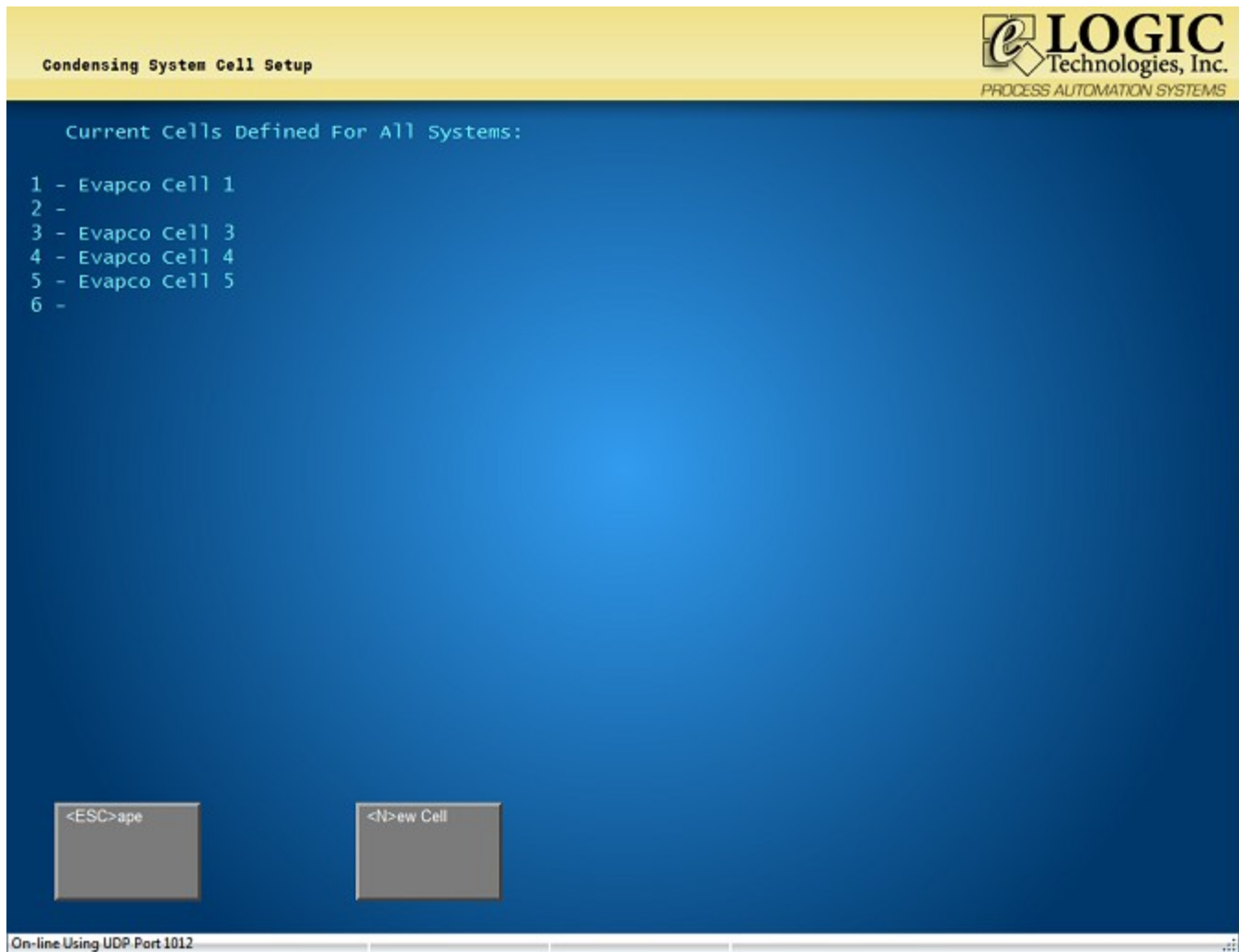
Key Sequence: <F3> - Condensing Management, <C>hange Settings, <M>ain Setup

This screen allows you to configure the control signals for the condenser.

- Group Analog Base Storage ID (your discharge pressure setpoint)
- System High Pressure Cutout Signal
- System Main Hot Gas Signal
- System Pre Hot Gas Signal
- Condenser Control Deadband
- Minimum Pressure For Defrost "Condenser"
- Water Pump - Temperature Setpoint
- Hot Gas Boost Value During Deforst

These can all be configured from this screen.

Control <T>ype - allows you to select the type of condenser you have, 'evaporative' or 'air cooled only'.




<C>ell Setup

Key Sequence: <F3> - Condensing Management, <C>hange Settings, <C>ell Setup

This screen allows you to view the current cells in your system and also allows you to add new cells.

Condensing System Cell Setup



<D>escription

Condenser Tag: C4 System: 2 Name: Evapco Cell 4

Control Type: 1 Fan Count: 2 Pump Count: 2 Tons: 0.0

<W>ater

Sig-Wlevel: 0 Wfeed: 0 Therm: 0 Heater: 0

<V>FD Speed

VFD Speed - Min %: 40 Max %: 90

<P>umps

Water Pumps -----

103 - O,EC-2A Pump Start	104 - I,EC-2A Pump Aux
108 - O,EC-2B Pump Start	109 - I,EC-2B Pump Aux

<F>ans

Fans -----

	VFD: CTRL	MON
101 - O,Spare Digital Outp	0	0
106 - O,Spare Digital Outp	0	0
102 - I,EC-2A Fans Aux		
107 - I,EC-2B Fans Aux		

<ESC>ape

On-line Using UDP Port 1012

<N>ew Cell

Key Sequence: <F3> - Condensing Management, <C>hange Settings, <C>ell, <N>ew

<D>escription - allows the user to enter general information about the cell.

<W>ater - allows the user to enter a water level device, feed signal, thermostat signal and a heater run signal.

<V>FD Speed - allows the user to set a minimum and maximum fan speed for the cell.

<P>umps - this selection allows the user to configure a digital output for a pump starter and also configure the corresponding aux. contact from the motor starter.

<F>ans - this selection allows the user to configure a digital output for each fans motor starter and also configure the corresponding aux. contact from the motor starter.




MAX <D>efrost

Key Sequence: <F3> - Condensing Management, <C>hange Settings, Max <D>efrost

This screen allows the user to enter the maximum number of triggered defrosts for a cell. Selections are "hot gas", "glycol", "electric", and "air".

Current Purging Status

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Seq.	Equipment Cycle List	Status	Time Total	----- Remaining
1	O,EC-1A Purge Point #1	Auto	300 Secs.	
2	O,EC-1A Purge Point #2	Active Auto	300 Secs.	58
3	O,EC-1B Purge Point #1	Auto	300 Secs.	

System Active

<ESC>ape

<PgDn>

<A>ctivate

<D>eactivate

<E>dit Setup

(line) = 8, x(col) = 343

<P>urger

Key Sequence: <F3> - Condensing Management, <P>urger

This screen allows the user to view and edit the purging points for each condenser.

The screen will indicate if purging is 'active' and how much time is left in each purging cycle.


<A>ctivate - allows you to manually activate the purge cycle for a purge point.

<D>eactivate - turns the purge cycle off.

<E>dit Setup - allows the user to edit the purge points.

Note: purgers are attached (grounded) to a specific safety system.

Purging System Definition File Editor



PROCESS AUTOMATION SYSTEMS

Seq.	Signal	Seconds	Signal Description
1	129	300	O,EC-1A Purge Point #1
2	130	300	O,EC-1A Purge Point #2
3	131	300	O,EC-1B Purge Point #1
4	0	0	** Not Used **
5	0	0	** Not Used **
6	0	0	** Not Used **
7	0	0	** Not Used **
8	0	0	** Not Used **
9	0	0	** Not Used **
10	0	0	** Not Used **
11	0	0	** Not Used **
12	0	0	** Not Used **
13	0	0	** Not Used **
14	0	0	** Not Used **
15	0	0	** Not Used **
16	0	0	** Not Used **
17	0	0	** Not Used **
18	0	0	** Not Used **
19	0	0	** Not Used **
20	0	0	** Not Used **
21	0	0	** Not Used **
22	0	0	** Not Used **
23	0	0	** Not Used **
24	0	0	** Not Used **
25	0	0	** Not Used **
26	0	0	** Not Used **
27	0	0	** Not Used **
28	0	0	** Not Used **
29	0	0	** Not Used **
30	0	0	** Not Used **
31	0	0	** Not Used **
32	0	0	** Not Used **

Purger Power Signal: 128
Attached Suction Pressure
Analog ID: 7

High Pressure Stop
Setpoint: 12.00

Edit <S>etup

Edit <P>oints

<Esc>ape

{line} = 165, x{col} = 294

<E>dit Setup

Key Sequence: <F3> - Condensing Management, <P>urger, <E>dit Setup

This screen allows the user to edit the setup and edit the actual purge points.

Edit <S>etup - allows the user to select 'purger power signal', 'attached suction pressure analog ID# ', 'high pressure purge stop setpoint'.

Edit <P>oints - allows the user to configure individual purge points based on sequence. "Purge Point Signal #" is selected along with "Purge Time".

Refrigeration Compressor Information Displays

Suction Setpoints: 26.0 32.0 10.0
(TUE NORM) Modes: Level 01 Level 02 Level 03 SCAuto Level 01 Standby

	Unit 1 HS-1	Unit 2 HS-2	Unit 3	Unit 4	Unit 5 BC-1	Unit 6
Suction (+PSIG) (-"hg)	24.5	24.5	24.5	10.4	10.4	5.1
Discharge Pres. (PSIG)	110.3	-14.7	3.0	6.6	107.8	-2.3
Oil Pressure. (PSIG)	119.7	27.3	123.8	28.0	27.6	123.8
Oil Filter Diff. (PSIG)	2.3	0.2	1.4	0.9	0.0	5.2
Suction Temp. (Deg. F)	8.8	64.9	-9.3	60.9	52.9	31.8
Oil Temp. (Deg. F)	121.2	57.7	124.4	56.4	53.3	117.6
Discharge Temp. (Deg. F)	149.2	73.9	182.1	72.1	66.8	124.6
Motor Current (% FLA)	0.0	0.0	0.0	0.0	0.0	0.0
Compressor Loading (%)	0.0	0.0	0.0	0.0	0.0	0.0
Motor Speed (% VFD)	n/a	n/a	n/a	n/a	n/a	n/a

Pressure System > +18F REC +18F REC +18F REC -25F REC -25F REC -35F REC

Current Status > LD Auto LD Auto LD Auto LD Auto LD Auto LD Auto
off off off off off off
Remote Remote Remote Auto Remote Remote
Normal Normal Normal Normal Normal Normal

Sel. <N>ext <P>age

Unit (1) Selected.
Page: 1

Compressor C1 Vilter
500 HP

<L>oad <U>nload <A>uto Loading <M>ode Change <E>dit Setup

<ESC>ape <C>hange Setpoints <S>top Staging <I>nfo

<F1> Analog

<F2> Valve Groups

<F3> Condensers

<F4> Compressors

<F5> Vessels

<F6> Safety

On-line Using UDP Port 1012


Refrigeration Compressor Information Display

Key Sequence: Main Menu, <F4> Compressor Management

The compressor information display was developed to support a wide variety of compressor packages such as Frick, MyCom, FES and Vilter. To the operator all compressors are transparent and appear the same on the display screen. Remote control and monitoring of each package is achieved through RS422/RS485 or Modbus/IP communications. Functional buttons at the bottom of the display allow the operator remote compressor control of all packages. Button control applies to the highlighted compressor that is selected by clicking on the compressor data area or using the <N>ext and <P>age buttons.

- <N>ext - Select to highlight the next compressor.
- <P>age - Select to move to the next entire page if more than six compressors are controlled.
- <L>oad - Select to manually load the compressor.
- <U>nload - Select to manually unload the compressor.
- <A>uto Loading - Places the compressor loading mode to automatic.
- <M>ode Change - Changes the operating mode of the compressor.
- <E>dit Setup - Changes the runtime setpoints.
- <C>hange Setpoints - Displays the change setpoint window.
- <S>top - Displays the stop window.

Staging <I>nfo - Displays the staging screen.



 PROCESS AUTOMATION SYSTEMS

Refrigeration Compressor Information Displays

Unit ID	Name	Tag = HS-1	% Load	Control I/O	Runtime
1	Compressor C1 Vilter		25	Start 2280 O,C1 Start AUX 2281 I,C1 Starter AUX 25 Load 1 2282 O,C1 Unloader 1 25 Load 2 2283 O,C1 Unloader 2 25 Load 3 2284 O,C1 Unloader 3 0 Load 4 0	413.9 Hrs.

Graphic Name:
Manufacturer Code: RC
Temp. Displayed In (F/C): F

Safetys -----
HDT 2285 I,C1 HDT
HOT 2286 I,C1 HOT
LOP 2287 I,C1 LOP
LSP 2288 I,C1 LSP
HDP 2289 I,C1 HDP

Anti-Recycle Time: 0 Minutes

VFD Ctrl: 0 VFD Monitor: 0

Compressor HP: 500
Motor FLA: 520.0 kw: 0.0
Safety C/O Output: 145
Analog Storage Base: 465

Comp ID: 1 Safety System: 1
Status I/O: 0

100 Total Loading % Loading Type: 0 - Unloaders

Runtime Setpoints

Allow Kw Inhibit: No

HiDischval: 200 SysAnalog: 2
System Disch Pres 1

Disch/Suct Diff Inhibit: 80 Lbs.

Disch Start Inhibit: 150 Lbs.

Minimum Loading %: 25
Minimum Load Run Time: 15 Sec.

Max % For Stage UP: 100 %

<ESC>ape
<C>hange Setup
Runtime <S>etpoints
<k>W Status
<R>eset Runtime

On-line Using UDP Port 1012

<E>dit Setup Screen

Key Sequence: Main Menu, <F4> Compressor Management, <E>dit Setup

This screen allows the operator to view the current setup of each compressor in their refrigeration system. This screen also allows for <C>hange Setup, Runtime <S>etpoints, <K>W Status, <R>eset Runtime

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Refrigeration Compressor Information Displays

Unit ID	Name	Tag = HS-1	% Load	Control I/O	Runtime
1	Compressor C1 Vilter		25	Start 2280 0,C1 Start AUX 2281 I,C1 Starter AUX	0.3 Hrs.
			25	Load 1 2282 0,C1 Unloader 1	
			25	Load 2 2283 0,C1 Unloader 2	
			25	Load 3 2284 0,C1 Unloader 3	
			0	Load 4 0	

Graphic Name:
Manufacturer Code: RC
Temp. Displayed In (F/C): F

Safety:-----
HDT 2285 I,C1 HDT
HOT 2286 I,C1 HOT
LOP 2287 I,C1 LOP
LSP 2288 I,C1 LSP
HDP 2289 I,C1 HDP

100 Total Loading % Loading Type: 0 - Unloaders

Runtime Setpoints
Allow Kw Inhibit: Yes
HiDischVal: 200 SysAnalog: 2

Anti-Recycle Time: 0 Minutes

VFD C: F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 Backspace

Compressor Motor Safety Analog: Q W E R T Y U I O P [] + !

Compressor Status: A S D F G H J K L @ " ' Enter

Z X C V B N M - % () * # Esc

1 2 3 4 5 6 7 8 9 0 : . = ,

Shift Next Space

On-line Using UDP Port 1013

<C>hange Setup

Key Sequence: Main Menu, <F4> Compressor Management, <E>dit Setup, <C>hange


The <C>hange Setup button will allow you to change the setup of your compressor.

The button will prompt you to enter:

- Name of the Compressor
- Tag ID for the Compressor
- Graphic Name
- Manufacturer's Code
- Temp Displayed in (F/C)
- Starting Load %
- Starting Signal
- Run Verification Signal
- Level 1 Load %
- Level 1 Load Signal
- Level 2 Load %
- Level 2 Load Signal

- Level 3 Load %
- Level 3 Load Signal
- Level 4 Load %
- Level 4 Load Signal
- Load Type
- High Discharge Temperature Input Signal
- High Oil Temperature Input Signal
- Low Oil Pressure Input Signal
- Low Suction Pressure Input Signal
- High Discharge Pressure Input Signal
- Anti-Recycle Time
- Compressor Motor VFD Control Output Signal
- Compressor Motor VFD Analog Monitor
- Compressor Motor HP
- Compressor Motor FCA
- Compressor Motor KW
- Compressor Safety Cutout Output Signal
- Compressor Analog Base ID
- Compressor Driver Scan ID
- Compressor Attached to Safety System #
- Compressor Status Storage Signal

Refrigeration Compressor Information Displays



PROCESS AUTOMATION SYSTEMS

Unit ID Name Tag = HS-1

1 Compressor C1 Vilter

Graphic Name:
Manufacturer Code: RC
Temp. Displayed In (F/C): F

Safety: -----

HDT 2285 I,C1 HDT
HOT 2286 I,C1 HOT
LOP 2287 I,C1 LOP
LSP 2288 I,C1 LSP
HDP 2289 I,C1 HDP

Anti-Recycle Time: 0 Minutes

VFD Ctrl: 0 VFD Monitor: 0

Compressor HP: 500
Motor FLA: 520.0 kw: 0.0
Safety C/O Output: 145
Analog Storage Base: 465

Comp ID: 1 Safety System:
Status I/O: 0

%	Load	Control	I/O					Runtime
25	Start	2280	O,C1	Start				0.5 Hrs.
	AUX	2281	I,C1	Starter	AUX			
25	Load 1	2282	O,C1	Unloader 1				

Compressor Discharge Stop Value: 200

<1>	<2>	<3>	<Esc>ape
<4>	<5>	<6>	
<7>	<8>	<9>	
<0>			<Enter>

<ESC>ape

<C>hange Setup

Runtime <S>etpoints

<k>W Status

<R>eset Runtime

On-line Using UDP Port 1013


Runtime <S>etpoints

Key Sequence: main Menu, <F4> Compressor Management, <E>dit Setup, Runtime <S>

The runtime setpoints screen allows the operator to configure setpoints for the compressor. The button will prompt the operator to change values such as:

- Compressor Discharge Stop Value
- Compressor Discharge Monitor Analog ID
- Compressor Differential Inhibit Value
- Compressor Discharge Inhibit Value
- Compressor Minimum Loading %
- Compressor Minimum Runtime
- Max % for Next Stage Start

Refrigeration Compressor Information Displays



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PROCESS AUTOMATION SYSTEMS

Unit ID	Name	Tag = HS-1	% Load	Control I/O	Runtime
1	Compressor C1 vilter		25	Start 2280 0,C1 Start AUX 2281 I,C1 Starter AUX	0.5 Hrs.
			25	Load 1 2282 0,C1 Unloader 1	
			25	Load 2 2283 0,C1 Unloader 2	
			25	Load 3 2284 0,C1 Unloader 3	
			0	Load 4 0	

Graphic Name:
Manufacturer Code: RC
Temp. Displayed In (F/C): F

Safetys -----
HDT 2285 I,C1 HDT
HOT 2286 I,C1 HOT
LOP 2287 I,C1 LOP
LSP 2288 I,C1 LSP
HDP 2289 I,C1 HDP

Anti-Recycle Time: 0 Minutes

VFD Ctrl: 0 VFD Monitor: 0

Compressor HP: 500
Motor FLA: 520.0 kw: 0.0
Safety C/O Output: 145
Analog Storage Base: 465

Comp ID: 1 Safety System: 1
Status I/O: 0

Runtime Setpoints

Allow Kw Inhibit: <Y>es <N>o

HiDischval: 200
System Disch Pres

Disch/Suct Diff I

Disch Start Inhib

Minimum Loading %: 25
Minimum Load Run Time: 15 Sec.

Max % For Stage UP: 100 %

<ESC>ape
<C>hange Setup
Runtime <S>etpoints
<k>W Status
<R>eset Runtime

On-line Using UDP Port 1013

<K>W Status

Key Sequence: Main Menu, <F4> Compressor Management, <E>dit Setup, <K>W Status

The <K>W Status allows you to run the compressor based on a KW setpoint.

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Refrigeration Compressor Information Displays

Suction Setpoints:	26.0	32.0	10.0
(TUE NORM) Modes:	Level 01	Level 02	Level 03
	Unit 1	Unit 2	Unit 3
	HS-1	HS-2	SCAuto
			Unit 4
			Unit 5
			Unit 6
			BC-1

Suction (+PSIG)(- "hg)	24.8	24.8	24.8	10.8	10.8	4.7
Discharge Pres. (PSIG)	107.9	-14.7	3.0	6.6	105.4	-2.3
Oil Pressure. (PSIG)	119.7	27.3	123.8	28.0	27.6	123.8
Oil Filter Diff. (PSIG)	2.3					
Suction Temp. (Deg. F)	8.8					
Oil Temp. (Deg. F)	121.2					
Discharge Temp. (Deg. F)	149.2					
Motor Current (% FLA)	0.0					
Compressor Loading (%)	0.0					
Motor Speed (% VFD)	n/a					

Pressure System > +18F REC +18F REC
 LD Auto LD Auto
 Off Off
 Remote Re
 Normal No

Current Status >

* Sel. <N>ext <P>age

Unit (1) Selected. Compressor 500 HP

Page: 1

<L>oad <U>nload <A>uto Load

<ESC>ape <C>hange Setpoints <S>tart Staging <I>nfo


On-line Using UDP Port 1012

<C>hange Setpoints

Key Sequence: Main Menu, <F4> Compressor Management, <C>hange Setpoints

The <C>hange setpoint button will display a window which will allow the compressor suction setpoint to be changed from the normal vessel setpoint and take over control of the selected compressor until a reset/restage compressor sequence is initialized. This will also change the selected set point if the compressor mode is in <A>utomatic (controlled by the microprocessor on the compressor).

Refrigeration Compressor Information Displays



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PROCESS AUTOMATION SYSTEMS

Suction Setpoints:		26.0					1.0
(TUE NORM) Modes:		Level 01	Level 02	Standby	Inactive	Level 01	Level 02
		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
		HS-1	HS-2			BC-1	
Suction (+PSIG)(- "hg)		249.1	249.1	249.2	3.1	3.0	5.0
Discharge Pres.							-0.1
Oil Pressure.							123.8
Oil Filter Diff.							5.2
Suction Temp.							31.8
Oil Temp.							117.6
Discharge Temp.							124.6
Motor Current							0.0
Compressor Loadin							0.0
Motor Speed							n/a

Verify Start
Compressor ID 01 Only.

<R>un

<Esc>ape

Pressure System >

Current Status >

* Sel. <N>ext <Page>

Unit (1) Selected. Compressor C1 vilter 500 HP

Page: 1

<L>oad

<U>nload

<A>uto Loading

<M>ode Change

<E>dit Setup

<ESC>ape

<C>hange Setpoints

<S>tart

Staging <I>nfo

<F1> Analog

<F2> Valve Groups

<F3> Condensers

<F4> Compressors

<F5> Vessels

<F6> Safety

C -35F REC

LD Auto

off

Remote

Normal


On-line Using UDP Port 1012

<S>tart

Key Sequence: Main Menu, <F4> Compressor Management, <S>tart

This screen allows the operator to start or stop the highlighted compressor.

Compressor Staging Information



	Lv1	Lv2	Lv3	Lv4	Lv5	Lv6	Lv7
	Lv8	Lv9	Lv10	Lv11	Lv12	Lv13	Lv14
(+18F REC) +18F High Temp Recirc. -> Level 1 of 3, Timer = 2.0, FL = INA							
VG-Request Idle	1-off	2-off	3-off				
Idle							
(-25F REC) -25F Low Temp Recirc. -> Level 1 of 1, Timer = 2.0, FL = INA							
VG-Request Idle	5-Run						
Idle							
(-35F REC) -35F Lower Temp Recirc. -> Level 1 of 1, Timer = 2.0, FL = INA							
VG-Request Idle	7-Run						
Idle							

<ESC>ape

<R>e-Sequence

On-line Using UDP Port 1012

Staging <I>nfo

Key Sequence: Main Menu, <F4> Compressor Management, Staging <I>nfo

This screen displays the compressor to vessel staging information. It shows how many compressors are assigned to each vessel (levels) and how many compressors assigned are currently running. This screen is for performance information.

The current timer count shows the timer value based on the most recent change in operating conditions. For example: the pressure in the vessel has increased and the system needs to start another compressor. The last vessel in the sequence will move its slide valve to 100%. Once the slide valve reaches 100%, and the rise rate is positive, a timer will start. As long as the rise rate stays positive and the slide valve is at 100%, the timer will continue to count up. When the timer reaches a certain value, the next compressor will start. If the rise rate changes from positive to negative, the timer will restart.

The last field on the black line is FL=X. FL stands for force level, X will be a number. The force level of the vessel sets the maximum compressor staging level that the system will start. For example: if you have four compressors on one vessel, and the force level is set to three. The level four compressor will never start, provided the force level is active.

Below the black line is a line that tells you the condition of the valve group request and the status of the running compressors. The status of the valve group (VG-XX) request can be one of four different values:

Stage UP
Stage Down
Off
Idle

Stage UP - The pressure in the vessel is above the setpoint plus deadband. The deadband for the pressure in a vessel is typically 1.5 pounds. If your setpoint is 10 pounds, your deadband would range from 8.5 pounds to 11.5 pounds.

Stage Down - The pressure in the vessel is below the setpoint minus the deadband.

Off - Valve group inhibit active.

Idle - The pressure in the vessel is within the deadband.

On the same line as the valve group request, is information about the compressors. This information displays the unit number of the compressors that are running, and information about their status. You will notice that the unit number and status will line up underneath the Lv1-Lv7 and Lv8-Lv14 lines above. The unit number corresponds with the level number listed above. After the unit number, you will see either 100% or Run.

100% - This compressor is fully loaded and the slide valve is at 100%. The suction pressure setpoint for this compressor has been lowered to ensure this compressor stays fully loaded. It will remain in this condition until the next compressor in the sequence has unloaded and shut off.

Run - This compressor is running and is now your trim machine.

The next line has a brown background. It can display several different messages. Most of them are related to the compressor. The valve group request information and the message on the brown line should be read together to give you information about the operation of the compressor staging sequence. You may never actually see some of the messages listed below, they will be displayed for only a short time before the next message is displayed.

Idle - The system is not operating.

Anti-recycle - The compressor is currently in a recycle delay.

Start Delay - The compressor has been told to start by the Signal Server and is waiting for the computer on the compressor to start the compressor.

Comp. Equalizing - The compressor is stopped and is waiting for the pressure in the receiver to drop below a setpoint.

SV 100% Wait - The compressor is waiting for the slide valve to reach 100% before the next compressor will start. There is a parameter in our master variables section that controls how far the slide valve actually has to go before the next compressor will start. Because some slide valves may never actually show 100%, this parameter is typically set to 95%.

User Hold Ack. - The control system wants to start another compressor but is waiting for the plant operator to give it permission before it will start another compressor.

Rise Rate Increase - The compressor has unloaded and is prepared to shut off, it is not shutting off because the rise rate in the vessel is positive.

SV @ 100% Mins. - The Mins. in this message should actually be seconds. The slide valve has reached 100%. The system is now waiting a certain number of seconds to see if the pressure starts to drop before starting the next machine. This is one of those messages you are unlikely to see.

VFD < 100% - The compressor VFD has not reached 100%.

SV Mx-Sec - This is the same as SV@100% Mins.

At Maximum - The slide valve is at its maximum position. In our picture above, HPR-1, you can see the slide valve has reached its maximum position and we are above our setpoint plus deadband (Stage UP). The pressure in this vessel can't be maintained with the existing compressor.

SV Minimum Wait - This command is similar to SV@100% Mins., but just the opposite. When the slide valve is below 15% and the rise rate in the vessel is negative, a timer will start. The compressor will not shut off until the timer has reached the end of its count.

At Minimum - The slide valve has reached its minimum position.

Discharge Inhib - The pressure in the oil separator is too high for the compressor to start.

Force Level - Shows last compressor in the sequence is the force level.

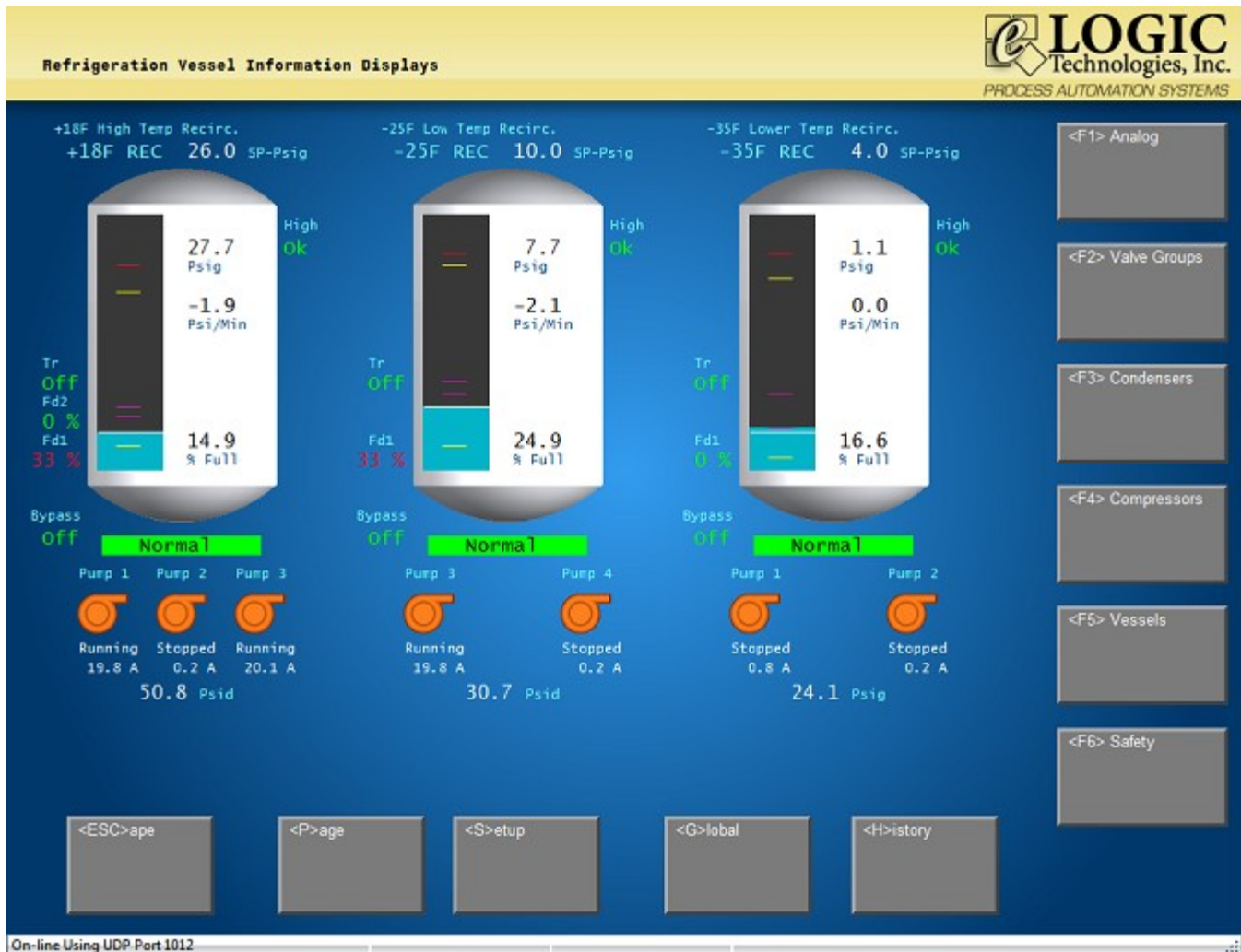
Forced Off - Not used.



Adjust Force Level

Key Sequence:

Move the mouse over the vessel tag (black line) and left click to bring up the following screen. In this example +18F high temperature recirc. This screen allows the operator to adjust the force level of your sequence and make the forcing option active or inactive, **<L>evel Hold Button**. The operator can also alter the **<S>tage UP** mode from 'normal' to hold for acknowledge. The operator can reset the **<S>tage UP** or **<S>tage down timer**. **<T>imer reset**.



Refrigeration Vessel Information Displays

Key Sequence: Main Menu, <F1> Process Overview, <F5> Vessel Management

Refrigeration vessel information displays shows the current conditions of each pressure vessel. The vessel ID, pressure rise rate, current vessel pressure, setpoint pressure, and percent full based upon column %.


All float, feed valves, and transfer valves are displayed real time, on each vessel. Vessel pump or pumper vessel status information is also displayed with the current condition of each removal system. Each vessel will also show status of pumps along with a pressure reading.

<S>etup - allows you to change, modify or add vessels. The **<S>etup** menu screen will step you through the process of setting up a vessel.

<G>lobal - allows you to change the low signal ID, liquid transfer during shutdown and split system shutdown.

<H>istory - allows you to select a vessel and do a trend based on **<A>rchived** data, **<C>urrent** data or data from an existing **<D>etailed** log file.

Refrigeration Pressure Systems Definition Editor.



System File Quick Reference.

[+18F REC] - +18F High Temp Recirc.
[-25F REC] - -25F Low Temp Recirc.
[-35F REC] - -35F Lower Temp Recirc.
[RECV] - High Pressure Receiver

* End Of List * Enter Setup Code Or <Enter>:

<ESC>ape

[New] Entry


On-line Using UDP Port 1012

<S>etup

Key Sequence: <F1>Process Overview, <F5> Vessel Management, <S>etup

<S>etup - allows you to change, modify or add vessels. The <S>etup menu screen will step you through the process of setting up a vessel.

If you click 'on' any of the recirculators listed in the screen above a new screen will open up where you can do a complete configuration of a vessel.



 PROCESS AUTOMATION SYSTEMS

Refrigeration Pressure Systems Definition Editor.

Type = ** Recirculator ** System Id : +18F REC

<div><F1> Name</div> <div><F2> Transfer</div> <div><F3> Level</div> <div><F4> Pressures</div> <div><F5> Floats</div> <div><F6> Feed</div> <div><F7> Pumps</div> <div><F8> Tags</div>	<p>Vessel Name : +18F High Temp Recirc. Safety System: 1</p> <p>Liquid Level Analog Number : 542 Level HR Feed Time : 0</p> <p>Transfer Valve I/O : 72 TR Inhibit ANA: 564</p> <p>Vessel Pres. Analog #s - Vessel: 11 Pump: 10 Rate: 12</p> <p>Float I/O Numbers : Hi(71) Alr(0) Op2(0) Op1(0) Low(0)</p> <p>Liquid Feed Valves: Op2(1536) Op1(1535)</p> <p>Number Of Pumps: 3 Active: 2 Lead: 1 Force I/O#: 0</p> <p style="padding-left: 100px;">Lead: 2</p> <p>Pump Information 0 Sec. Feed On Low Pressure</p> <table border="0" style="width: 100%;"> <tr> <td style="text-align: center;">Pump 1</td> <td style="text-align: center;">Pump 2</td> <td style="text-align: center;">Pump 3</td> </tr> <tr> <td style="text-align: center;">Ctrl/Vrfy/Pres/Typ</td> <td style="text-align: center;">Ctrl/Vrfy/Pres/Typ</td> <td style="text-align: center;">Ctrl/Vrfy/Pres/Typ</td> </tr> <tr> <td style="text-align: center;">74 75 0 AN</td> <td style="text-align: center;">76 77 0 AN</td> <td style="text-align: center;">205 206 0 AN</td> </tr> <tr> <td style="text-align: center;">Safety: 0</td> <td style="text-align: center;">Safety: 0</td> <td style="text-align: center;">Safety: 0</td> </tr> <tr> <td style="text-align: center;">Mtr Amps: 546</td> <td style="text-align: center;">Mtr Amps: 547</td> <td style="text-align: center;">Mtr Amps: 548</td> </tr> </table> <p>Tags: Pump 1 Pump 2 Pump 3</p> <p>Min. Flow Bypass Valve: 202</p>	Pump 1	Pump 2	Pump 3	Ctrl/Vrfy/Pres/Typ	Ctrl/Vrfy/Pres/Typ	Ctrl/Vrfy/Pres/Typ	74 75 0 AN	76 77 0 AN	205 206 0 AN	Safety: 0	Safety: 0	Safety: 0	Mtr Amps: 546	Mtr Amps: 547	Mtr Amps: 548
Pump 1	Pump 2	Pump 3														
Ctrl/Vrfy/Pres/Typ	Ctrl/Vrfy/Pres/Typ	Ctrl/Vrfy/Pres/Typ														
74 75 0 AN	76 77 0 AN	205 206 0 AN														
Safety: 0	Safety: 0	Safety: 0														
Mtr Amps: 546	Mtr Amps: 547	Mtr Amps: 548														

<T>ype

<Esc>ape

<N>ext

<P>revious

<F>irst

<L>ast

ete

On-line Using UDP Port 1012

Vessel Main Setup Menu

Key Sequence: Key Seq: <F1> Process Overview <F5> Vessel Management, <S>etup

Click on the individual line for a vessel to find this screen.

The vessel main setup menu allows you to modify/change the current setup of a vessel. The menu has several buttons on the left side of the screen.

<F1> Name - allows you to give a description to the vessel.

<F2> Transfer - allows you to enter the transfer value signal number for the vessel along with a transfer destination level analog ID number.

<F3> Level - allows you to enter a vessel liquid level analog ID number to the vessel.

<F4> Pressures - allows you to enter a vessel main pressure analog ID number, a vessel pump pressure analog ID number and a vessel pressure rise analog ID number.

<F5> Floats - allows you to configure several floats for each vessel. Vessel high level float signal ID number, vessel

alarm level float signal ID number, vessel operating level two float signal ID number, vessel operating level one float signal ID number, vessel low level float signal ID number.

<F6> Feed - allows you to enter a operating level two feed signal ID number, operating level one feed signal ID number. You will also be prompted to select the 'valve' type:

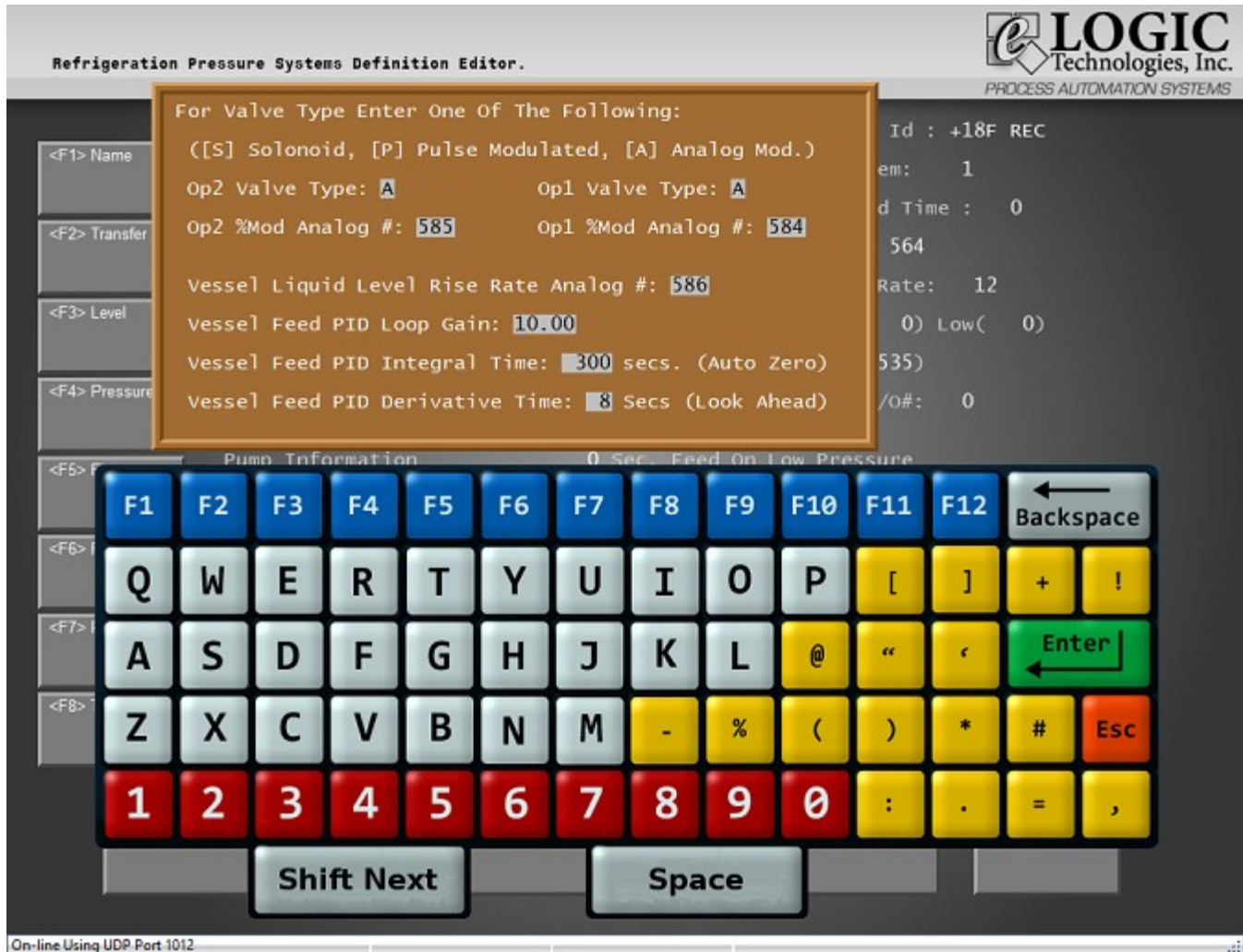
S - Solenoid

P - Pulse Modulated

A - Analog Modulated

For each value along with the %mod analog ID number and vessel liquid level rise rate analog ID number, vessel feed PID loop gain, Vessel feed PID integral time, vessel feed PID derivative time.

Please see next page to see how the display will look.



<F6> Feed

Key Sequence: <F6> Feed

<F7> Pumps - this button allows you to configure the pumps for each vessel.

- number of pumps
- number of active pumps
- pump 1 sequence
- pump 2 sequence
- external pump force signal ID number
- pump cavitation feed time
- minimum flow bypass valve signal ID number
- pump 1 run signal ID number
- pump 1 run verify signal ID number
- pump 1 pressure switch signal ID number
- trigger 1 type O=analog I=switch
- pump 1 safety input signal ID number
- pump 1 motor amps analog ID number
- pump 2 run signal ID number

- pump 2 run verify signal ID number
- pump 2 pressure switch signal ID number
- trigger 2 type O=analog I=switch
- pump 2 safety input signal ID number
- pump 2 motor amps analog Id number
- pump 3 run signal ID number
- pump 3 run verify signal ID number
- pump 3 pressure switch signal ID number
- trigger 3 type O=analog I=switch
- pump 3 safety input signal ID number
- pump 3 motor amps analog signal ID number

<F8> Tags - allows you to choose the type of vessel

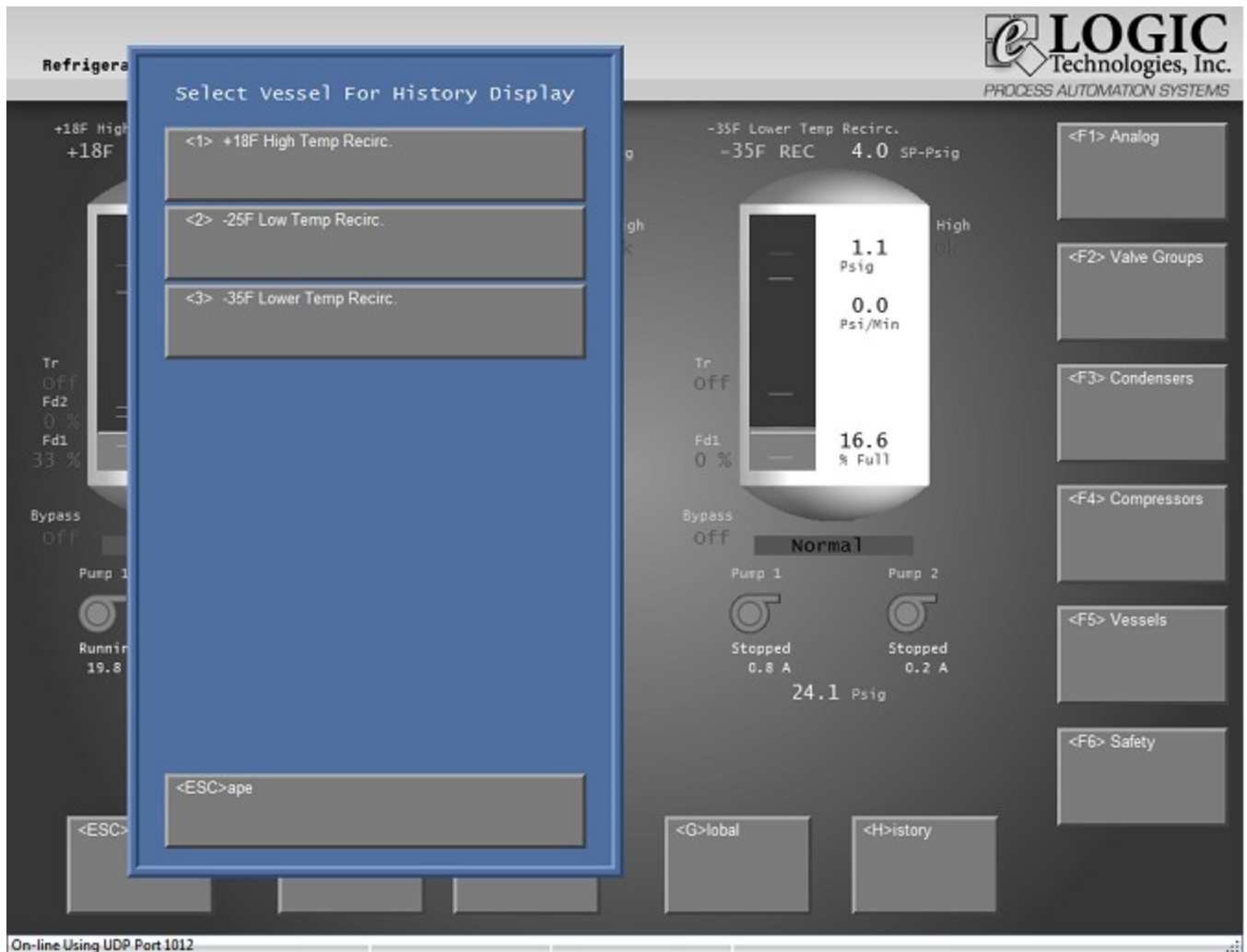
- <R>ercirculator**
- <P>umper Accumulator**
- <A>ccumulator**
- <E>xternal Recirculator PKG**



<G>lobal

Key Sequence: <F1> Process Overview, <F5> Vessel Management, <G>lobal

<G>lobal allows you the operator to select/change the receiver low signal ID number, allow or not allow liquid transfer during shutdown, and allow or not allow a split system shutdown.

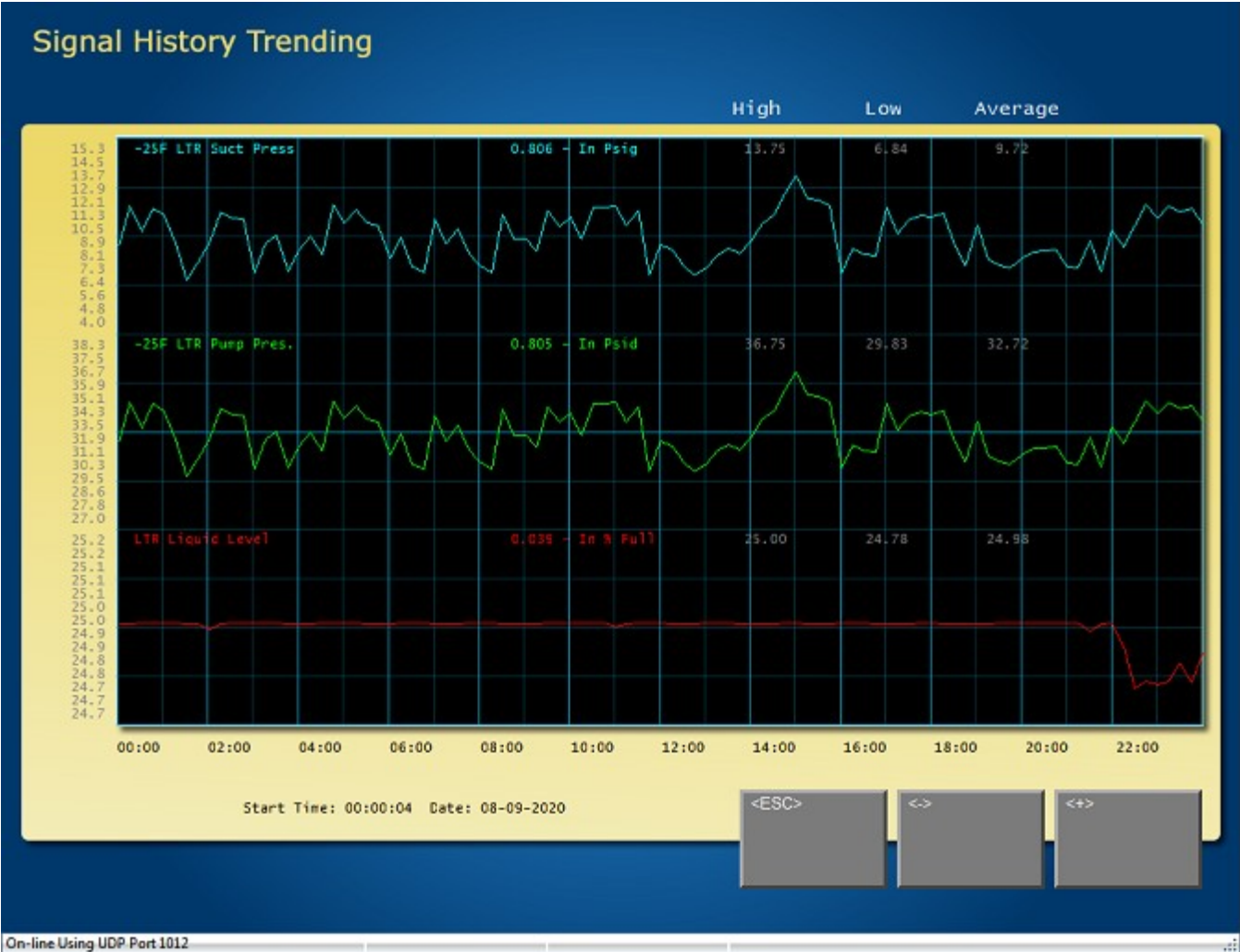


<H>istory Display

Key Sequence: <F1> Process Overview, <F5> Vessel Management, <H>istory

The <H>istory display will allow you to trend data from any vessel that you select. The data can be <A>rchived from a saved file or displayed from <C>urrent data. The trend graph will display values such as suction pressure, liquid level, etc. in real time with a time and date stamp.

Please see the next page for an example.



Key Sequence:



Select Vessel

Key Sequence: Main Menu, <F5> Vessel Management, 'click on vessel'

The select vessel screen will display all setpoint and operational modes for the selected vessel.

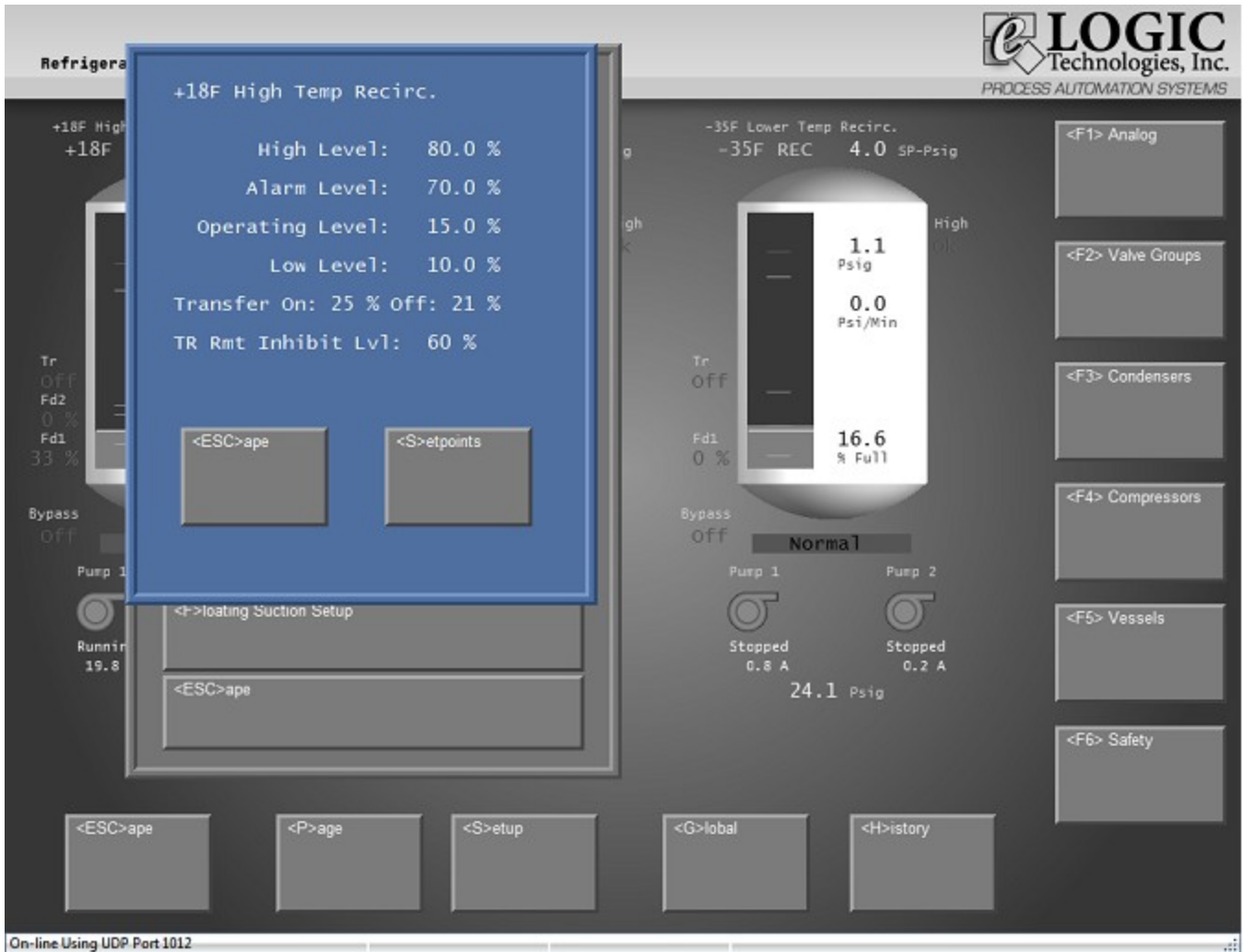
- <S>tart <S>top vessel operations
- valve group <I>nhibit compressors
- force <T>ransfer enable
- liquid <L>evel setpoints
- <P>ressure setpoints
- <F>loating suction pressure

<S>tart <S>top vessel operations will allow you to manually start or stop the vessel from operation. The status will also be displayed in the screen button.

Valve group <I>nhibit compressors allow you to enter a delay time in seconds. Once entered, delay time will also be displayed screen button.

<T>ransfer disable - allows you to enable or disable the pump transfer. The status of the transfer will also be

displayed in the screen button.



Liquid <L>evel Setpoints

Key Sequence: Main Menu, <F5>, 'click vessel', Liquid <L>evel Setpoints

Liquid <L>evel setpoints will allow you to configure various setpoints based on % of vessel liquid column level.

-High Level Setpoint:

Displayed in % fill of vessel liquid column level. A high level condition will shutdown/force fail any compressors, ammonia pumps, and liquid feed solenoid valves that are linked to the vessel experiencing a high level condition and will display the vessel ID and condition on the alarm status screen.

-Alarm Level Setpoint:

This setpoint level will trigger an alarm on the alarm screen but will not shut anything down.

-Operating Level Setpoint:

Displayed in % to fill of vessel liquid column level. The operating level is the level the vessel tries to maintain under normal operating conditions.

-Low Level Setpoint:

Displayed in % fill of vessel liquid column level. A low level condition will stop the ammonia pumps from operating and will display the vessel ID and condition on the alarm status screen. This condition will automatically reset if the low level condition is reset or corrected.

-Transfer on Level Setpoint:

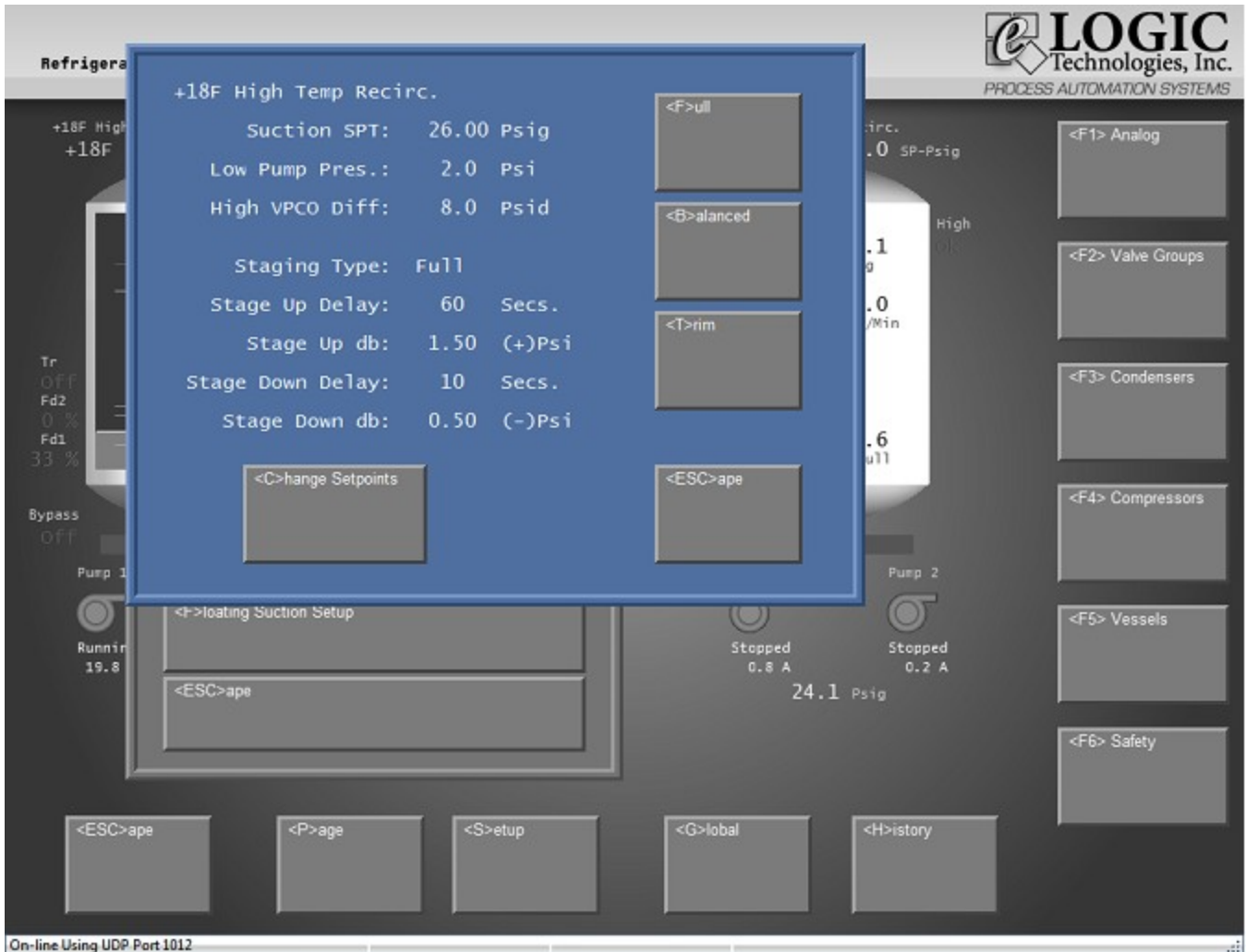
Displayed in % fill of vessel liquid column level. The setpoint is set to allow the liquid transfer system to come on before a high level condition occurs.

-Transfer Off Level Setpoint:

Displayed in % to fill of vessel liquid column level. The setpoint is set to turn stop the liquid transfer system from running before a low level condition occurs.

-Transfer Inhibit Level Setpoint:

Displayed in % fill of vessel liquid column level. This setpoint is setup so that you do not transfer to another vessel that has reached a high fill level.



<P>ressure Setpoints

Key Sequence: <F1> Process Overview, <F5>, 'click vessel', <P>ressure Setpoint

<P>ressure setpoints screen will allow you to change/modify setpoints for the following:

-**Suction Setpoint** - displayed in PSiG and is the vessel's suction operating setpoint. It also reflects suction and capacity control of the compressors that are linked to the current vessel. The setpoint is transmitted to each compressor assigned to the vessel.

-**Pump Differential Cutout Setpoint** -

-**High Vessel Pressure Cutout Setpoint** - high vessel pressure cutout is designed as a safety to shut down ammonia pump vessel liquid feed preventing flooding conditions in the evaporators in case of compressor failure. This condition will also display a HVPCO on the vessel status screen. Note: this setpoint is a + offset pressure of the actual vessel suction pressure.

- Stage up delay time
- Stage up (+) deadband
- Stage down time delay

-Stage down (-) deadband

You can also change the type of staging, choices are:

<F>ull - means full load 100% load
alanced
<T>rim



<F>loating Suction Setup

Key Sequence: <F1>, <F5>, 'click vessel', <F>loating Suction Setup

Background Information

The concept of floating suction pressure is to allow a program to automatically adjust a vessel's suction pressure set point so that the suction pressure can be raised up to the highest pressure that will still allow the system to maintain the room temperature in the coldest room which has air units connected to the suction line of that vessel. By raising the operating suction pressures up as high as possible, in theory, you can reduce the energy consumption of the refrigeration system.

There is a button in the vessel set point window for **Floating Suction Setup** that opens up another window for entry of the definitions for floating suction pressure for that particular vessel. The first thing that must be entered is the **Maximum Suction Temperature Differential (Below the Room Temp Set Point)** (see the next paragraph for a description). Next, up to ten valve group numbers can be entered which the program will scan to determine how much of an adjustment to make. Only air units in the coldest room serviced by this vessel should be entered. Next, you will need to select the sampling method: **Averaging** or **Highest**. **Averaging** calculates and averages the demand from all of the defined air units (excluding units that are currently defrosting or are forced off). **Highest** calculates demand only from the air unit that has the highest temperature with relation to it's set point (excluding all


units that are not currently in cooling mode). Demand is calculated as a percentage. Zero percent corresponds an air unit's set point minus it's dead band while one hundred percent corresponds to it's set point plus it's dead band. The final entry is to Enable or Disable floating pressure adjustment for this vessel. Adjustments to the vessel pressure set point will not be made unless it is Enabled.

The Maximum Suction Temperature Differential will determine the low limit to which the suction pressure can be adjusted. For example, if you are currently running a suction pressure set point that, when translated by a Pressure/Temperature chart, equals eighteen degrees below the room temp set points then eighteen would be the Maximum Differential. The upper suction pressure limit is determined by the air unit that has the lowest temperature set point minus five degrees F.

The sampling rate is once every five minutes. If the calculated demand is greater than or equal to thirty five percent and less than or equal to ninety five percent, In other words it falls between 35 to 95 percent, then no adjustment to the pressure will be made. If the demand is less than thirty five percent then the suction pressure/temperature can be increased. The increase starts at 0.2 degrees at 35 percent and gets proportionally larger the further below 35 percent that the demand goes. The maximum increase is limited to 1.5 degrees per sample interval. If the demand is greater than 95 percent then the suction pressure/temperature will need to be decreased. The decrease starts at -0.2 degrees at 100 percent and gets proportionally more negative the higher above 100 percent that the demand goes. The maximum decrease is limited to -1.5 degrees per sample interval. By having the no increase made until the demand is less than 35 percent, any VFDs on the air units should be at nearly their minimum speed, However, adjustments will be made before the room temperature has dropped low enough to make the units go off cycle. By waiting until the demand is greater than 95 percent before making a decrease in pressure, this will help ensure that as many of the air units are running as is possible.

If the refrigeration system is restarted after a shutdown or if the control computer is rebooted then there is a one hour delay before the program will make any adjustments to the suction pressure set point on a vessel. Until then, the set point will remain as it was prior to the shutdown or reboot.

Refrigerant Sensor Monitoring / Safety Systems Status



Location	Alarm PPM	Current PPM	Alr Mon	Scan Mode
019 Energy Center Low AE-1	50.0	0.0	Active	Inactive
020 Energy Ctr. High AE-2	1000.0	-15.2		Inactive
021 Penthouse 1 NH3 AE-3	75.0	-0.0		Inactive
022 Penthouse 2 NH3 AE-4	85.0	-0.1		Inactive
023 Penthouse 3 NH3 AE-5	75.0	-0.1		Inactive
024 Penthouse 4 NH3 AE-6	25.0	-0.0		Inactive
025 Penthouse 5 NH3 AE-7	90.0	0.1		Inactive
026 Penthouse 6 NH3 AE-8	75.0	-0.1		Inactive
027 Penthouse 7 NH3 AE-9	75.0	-0.0		Inactive
028 Penthouse 8 NH3 AE-10	75.0	-0.0		Inactive
029 Penthouse 9 NH3 AE-11	75.0	-0.0		Inactive
030 Penthouse 9A NH3 AE-12	75.0	-0.1		Inactive
031 +35F Dock East AE-13	75.0	-0.1	Active	Inactive
032 +35F Dock East AE-14	75.0	-0.1	Active	Inactive
033 +35F Dock East AE-15	75.0	-0.1		Inactive
034 +35F Dock West AE-16	75.0	-0.0		Inactive
035 +35F Dock West AE-17	75.0	-0.0		Inactive
036 +35F Dock West AE-18	75.0	-0.0		Inactive
037 Vent Line NH3 AE-19	5000.0	-2.0		Inactive

System Master Valves: Unlocked

<ESC>ape

To Menu.

<N>ext Page

<R>eset

<S>etup

<F1> Analog

<F2> Valve Groups

<F3> Condensers

<F4> Compressors

<F5> Vessels

<F6> Safety

On-line Using UDP Port 1012

Safety System Status


Key Sequence: Main Menu, <F6> Safety Systems

This screen gives you an overview of all the devices tied into your facility safety system. In this case the screen will list the device with description what the alarm PPM setpoint is set at, what the actual PPM (current) reading is and if the device is being alarm monitored and scanned.

Also noted is 'system master values: locked or unlocked'. This gives you an indication of the hot gas king values being locked off in the case of an ammonia leak.

<S>etup button allows you to setup your safety system for different engine rooms.

Refrigeration Safety Setup Utility

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PROCESS AUTOMATION SYSTEMS

Safety Systems Quick Reference. (Select Item To Modify)

[N2]	1	Engine Room 1
[N3]	2	Engine Room 2

* End Of List * Enter Setup Code Or <Enter>:

<ESC>ape

[New] Entry

On-line Using UDP Port 1012

Safety Systems Status Setup

Key Sequence: Main Menu, <F6> Safety Systems, <S>etup

The safety systems status setup screen allows you to define the safety systems for each engine room. In the example above, there are two engine rooms, by clicking on one of the engine rooms that will then open up a configuration screen.

Refrigeration Safety Setup Utility

e LOGIC Technologies, Inc. PROCESS AUTOMATION SYSTEMS

<F1> - Safety System: Engine Room 1 2 Record(s) In File.
Attached to System: 1 N2 Selected

<F2> - System E-Stop Inputs
1 - I,ESTOP Button (Panel 2) 0 -
3 - I,Power OK Input 0 -
0 - 0 -

<F3> - Signals Active (Tripped If Refrigerant Leak)
0 - 0 -
0 - 0 -
0 - 0 -

<F4> - Signals Active During Normal Operation
0 - 0 -
0 - 0 -
0 - 0 -

<F5> - Notification Signals
Visual Audible
0 - 0 -
0 - 0 -
0 - 0 -
0 - 0 -

ete <ESC>ape

On-line Using UDP Port 1012

Engine Room Configuration Screen

Key Sequence: Main Menu, <F6>, <S>etup, [SYS 1] 1 Safety Extensions System

This screen allows you to configure the safety control points for the engine room selected. On the left hand side of the screen are a column of buttons that allow you to configure different things.

<F1> allows you to define a system name and which system it is.

<F2> system E-stops inputs allows you to select up to six E-stop control points for your safety system.


<F3> allows you to select six signal points to be tripped in a refrigeration leak exists.

<F4> allows you to select signals that will indicate a normal operation.

<F5> notification signals allows you to program four visual signals (strobes) and four available signals (horns) in the event of an ammonia leak.

The configuration screen gives you the user the ability to shut down a complete facility or part of your facility. (Example: condenser blast freezer, area cooler, etc..) By turning off the king values.

Analog Signal Setup Utility



<D>escrip

S<i>gnal

<R>anges

<M>in/Max

C<o>ntrol

<G>roup

<ESC>ape

Description: Energy Center Low AE-1

Signal Database #: 1011 = I,Energy Center NH3 Low

Alarms Enabled By - Always Enabled

Alarm Mode: High (ACT) Delay: 0 Secs - Cur: 0 AE: 0

Low Alarm: 0.00 db: 0.0 Lv: 0 Job: VZc: 0

High Alarm: 50.00 db: 10.0 Lv: 0 Job: nh3eng VZc: 1

Alarm Status: NO ALARM Time: 09:16:44 Date: 03-02-15

Min\Max Recording Status: ACTIVE

Minimum Value: 0.00 Time: 23:59:00

Maximum Value: 0.00 Time: 23:59:00 Span: 0.00

991 = 0,NH3 Leak High Spd Rqs - Off

Control: 991 & 0 On > 0.00 Dead Band: 0.00 Job:

0 & 0 Off > 0.00 Dead Band: 0.00 Job:

Group: NH3

Analog ID # 19 Scan = 0.54 04-06-2021 08:23:53

Last Message : Alarm Activated - 03-31-2021 15:08:19

Current Value: 0.00 PPM

Raw Value: 0

<A>alarm Monitor

Alarm <T>ype

Alarm D<e>lay

<S>can

INACTIVE

<C>alibrate

<H>istory

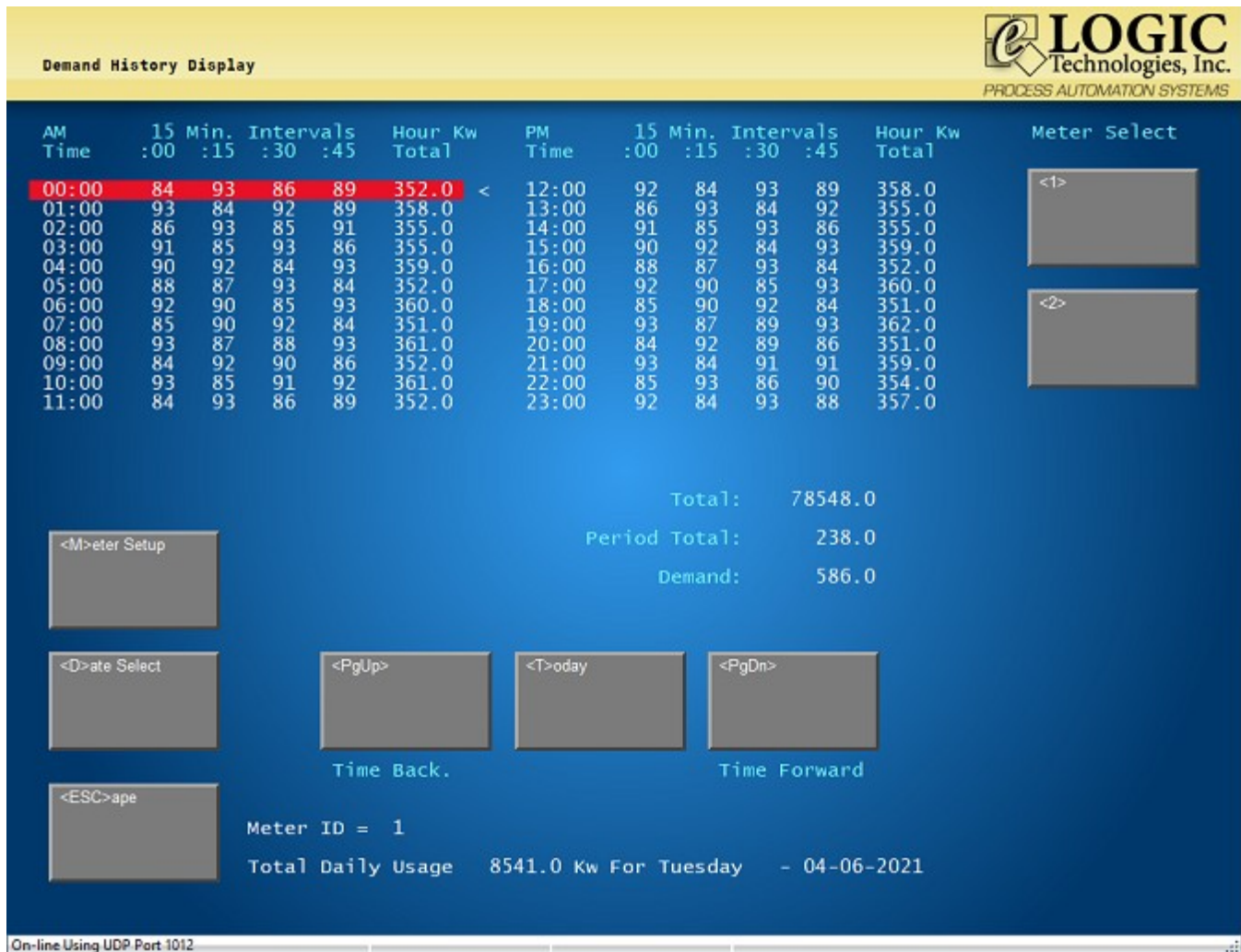
On-line Using UDP Port 1012

Analog Signal Setup Utility

Key Sequence: Main Menu, <F6>, Click on 019 Energy Center Low AE-1

This screen allows you to define, configure and calibrate an NH3 sensor.

This screen is the same screen for this control point that is also displayed under the <F1> system process values or <F1> analog button.



<F7> System Power Management

Key Sequence: Main Menu, <F7> System Power Management

The system power management screen allows a user to monitor the hourly system power and demand usage for the facility over a 24 hour period. This requires a power company XY pulse meter with an end of pulse period. This feature helps a user to organize, summarize and display their energy usage and demand.


Snapshots of power demands are written to the database in fifteen minute intervals. Highest hourly demand is displayed in RED to distinguish the entry from others.

<M>eter Setup - allows you to set up to two individual meters, the type of meter, pulse, meter end of pulse period, meter pulse multiplier, meter analog storage base.

<D>ate Select - allows you to set up a date range.

Total KWH used is displayed, period total and demand total.

Refrigeration Valve Group Setpoint Schedule Editor



Unit:	13	Description:	- 10F Freezer - E13 PH-4					
Day			Change 1	Change 2	Change 3	Change 4	Change 5	Change 6
Sunday	Cond:	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
	Time:	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
	Setpoint:	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Monday	Cond:	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
	Time:	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
	Setpoint:	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tuesday	Cond:	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
	Time:	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
	Setpoint:	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wednesday	Cond:	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
	Time:	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
	Setpoint:	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thursday	Cond:	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
	Time:	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
	Setpoint:	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Friday	Cond:	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
	Time:	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
	Setpoint:	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Saturday	Cond:	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
	Time:	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
	Setpoint:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Select Time Slot with Arrow Keys Or Mouse.

On-line Using UDP Port 1012

<E>dit

<PgUp>


<PgDn>

<S>eason

<Esc>ape>

Key Sequence:

Refrigeration Engine Room Setup Utility

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System Schedule Table Quick Reference. (Select Item To Modify)

[SUMMER]	1	00:00:00 - No Day (Static)	Active
[TUENORM]	2	19:00:00 - Tuesday	
[TUEPROD]	3	06:00:00 - Tuesday	
[WINTER]	4	00:00:00 - No Day (Static)	

* End Of List * Enter Setup Code Or <Enter>:

<ESC>ape

[New] Entry


On-line Using UDP Port 1012

<R>e-Sequence

Key Sequence: Main Menu, <F4>, Staging <I>nfo, <R>e-Sequence

This screen allows to set up and save schedules for the engine room compressor which also can be changed and modified.

Refrigeration Engine Room Setup Utility

 **LOGIC**
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PROCESS AUTOMATION SYSTEMS

<F1>

- Day Of Week To Activate : 3 - Tuesday
Time Of Day To Activate : 19:00:00

4 Record(s) In File.
Setup Code : TUENORM

<F2>

- System Discharge Pressure(s):
Sys 1: 140.00 Sys 2: 145.00

<F3>

- Change Compressor Staging Sequence.

<F4>

- Change Pressure System Settings.

<F5>

- Activate Current Selection At This Time.


ete

<ESC>ape

On-line Using UDP Port 1012

Key Sequence:

Refrigeration Engine Room Setup Utility

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PROCESS AUTOMATION SYSTEMS

Comp. 01	System ID: +18F REC	Mode: Level 01	Suct. SPT: 26.0	Type: RC
Comp. 02	System ID: +18F REC	Mode: Level 02	Suct. SPT: 26.0	Type: RC
Comp. 03	System ID: +18F REC	Mode: Level 03	Suct. SPT: 26.0	Type: RC
Comp. 04	System ID: -25F REC	Mode: Auto	Suct. SPT: 32.0	Type: RC
Comp. 05	System ID: -25F REC	Mode: Level 01	Suct. SPT: 10.0	Type: RC
Comp. 06	System ID: -35F REC	Mode: Standby	Suct. SPT: 0.0	Type: RC
Comp. 07	System ID: -35F REC	Mode: Level 01	Suct. SPT: 4.0	Type: RC

Select Compressor:

<ESC>ape

On-line Using UDP Port 1012

Key Sequence:

Refrigeration Engine Room Setup Utility

Current System: +18F REC

[+18F REC] - +18F High Temp Recirc.

[-25F REC] - -25F Low Temp Recirc.

[-35F REC] - -35F Lower Temp Recirc.

<Return> For No Change

uct. SPT:	26.0	Type: RC
uct. SPT:	26.0	Type: RC
uct. SPT:	26.0	Type: RC
uct. SPT:	32.0	Type: RC
uct. SPT:	10.0	Type: RC
uct. SPT:	0.0	Type: RC
uct. SPT:	4.0	Type: RC

Enter System Vessel ID Code.

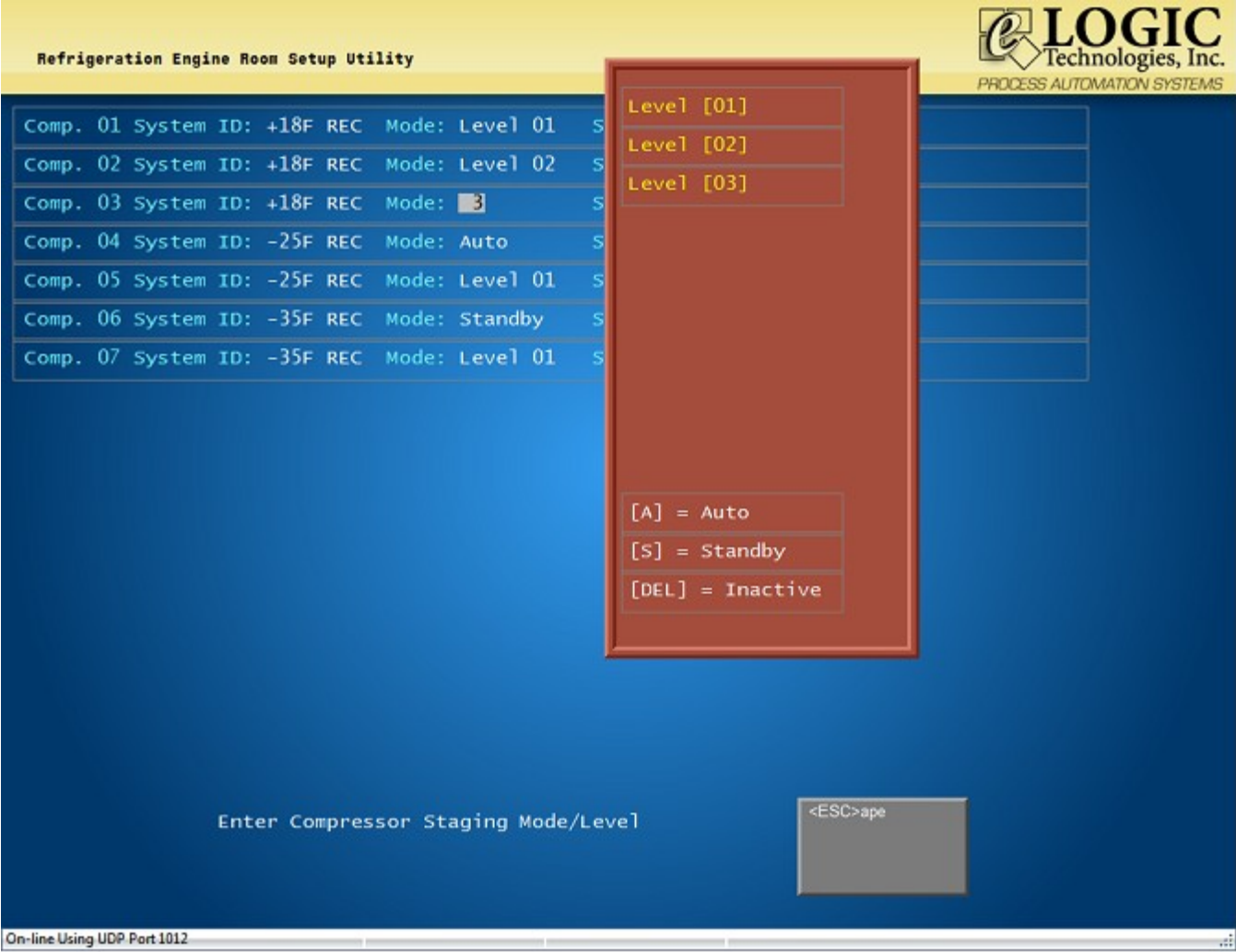
<ESC>ape

On-line Using UDP Port 1012

LOGIC Technologies, Inc.


PROCESS AUTOMATION SYSTEMS

Key Sequence:



Key Sequence:

Refrigeration Engine Room Setup Utility

e-LOGIC
Technologies, Inc.
PROCESS AUTOMATION SYSTEMS

Pressure ID	Setpoint (+-Psi) -1 Psi = -2 Hg
[1] > -35F REC	4.00
[2] >	0.00
[3] >	0.00
[4] >	0.00
[5] >	0.00
[6] >	0.00

Select Entry To Change:

<ESC>ape


On-line Using UDP Port 1012

Key Sequence:



Key Sequence:

Refrigerant Sensor Monitoring / Safety Systems Status



LOGIC Technologies, Inc.
PROCESS AUTOMATION SYSTEMS

Location	Alarm PPM	Current PPM
Energy Center Low AE-1	50.0	-0.2
Energy Ctr. High AE-2	1000.0	-15.2
Penthouse 1 NH3 AE-3	75.0	-0.0
Penthouse 2 NH3 AE-4	85.0	-0.1
Penthouse 3 NH3 AE-5	75.0	-0.1
Penthouse 4 NH3 AE-6	25.0	-0.0
Penthouse 5 NH3 AE-7	90.0	0.1
Penthouse 6 NH3 AE-8	75.0	-0.1
Penthouse 7 NH3 AE-9	75.0	-0.0
Penthouse 8 NH3 AE-10	75.0	-0.0
Penthouse 9 NH3 AE-11	75.0	-0.0
Penthouse 9A NH3 AE-12	75.0	-0.1
+35F Dock East AE-13	75.0	-0.1
+35F Dock East AE-14	75.0	-0.1
+35F Dock East AE-15	75.0	-0.1
+35F Dock West AE-16	75.0	-0.0
+35F Dock West AE-17	75.0	-0.0
+35F Dock West AE-18	75.0	-0.0
Vent Line NH3 AE-19	5000.0	-2.0

<ESC>ape

To Menu.

<N>ext Page

<R>eset

<S>etup

<F1> Analog

<F2> Valve Groups

<F3> Condensers

<F4> Compressors

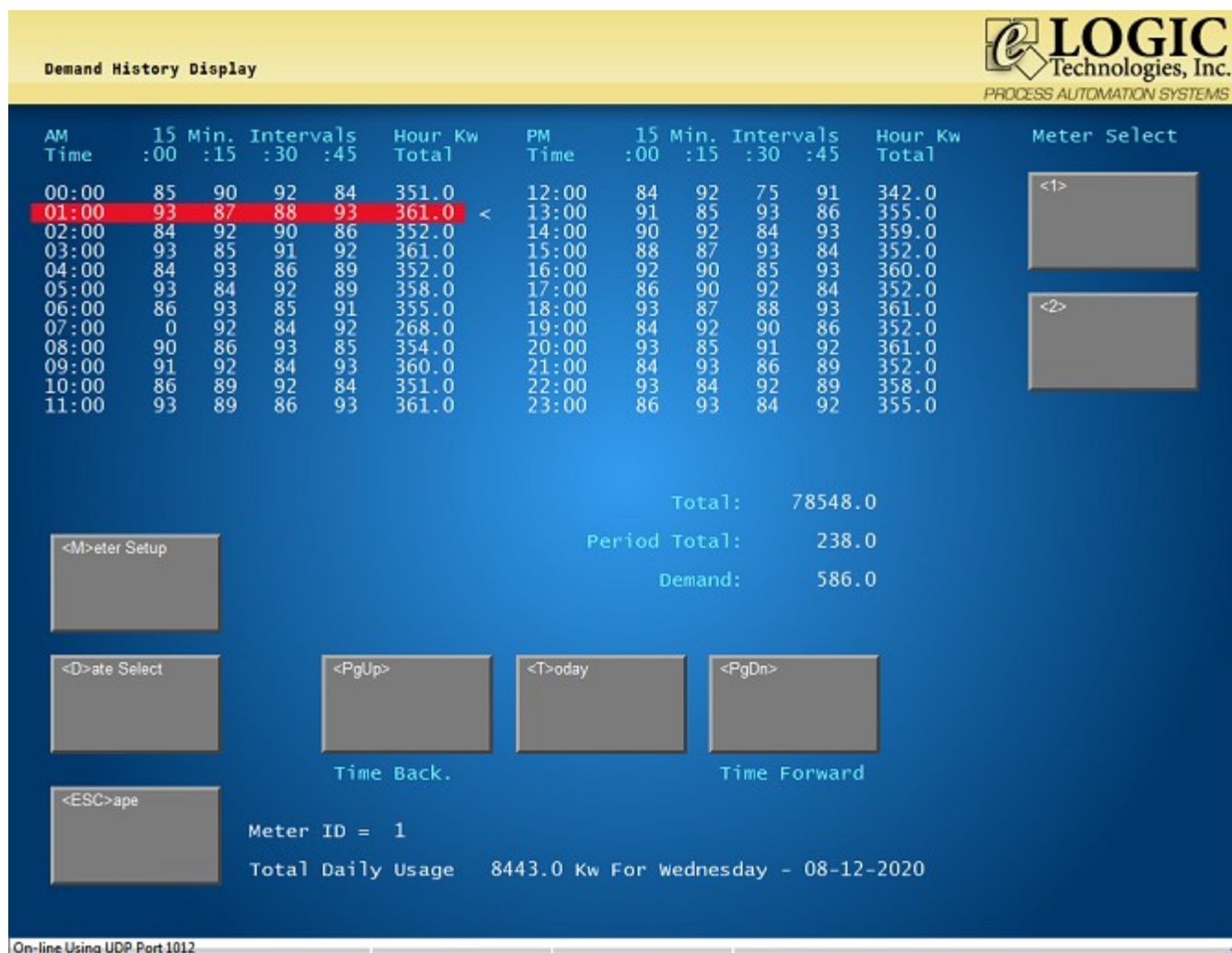
<F5> Vessels

<F6> Safety

System Master Valves: Unlocked


On-line Using UDP Port 1012

Key Sequence:



Key Sequence:

Process Report Selection Menu



LOGIC
Technologies, Inc.
PROCESS AUTOMATION SYSTEMS

<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F1></div> <div style="margin-left: 20px;">- Evaporator Control Information. (evapcrpt)</div>	<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F7></div> <div style="margin-left: 20px;">- N/A</div>
<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F2></div> <div style="margin-left: 20px;">- Evaporator Defrost Information. (evapdrpt)</div>	<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F8></div> <div style="margin-left: 20px;">- N/A</div>
<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F3></div> <div style="margin-left: 20px;">- Evaporator Temperature Schedule. (evaptrpt)</div>	<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F9></div> <div style="margin-left: 20px;">- N/A</div>
<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F4></div> <div style="margin-left: 20px;">- Evaporator Current Temperatures. (evtmpcpt *)</div>	<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F10></div> <div style="margin-left: 20px;">- N/A</div>
<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F5></div> <div style="margin-left: 20px;">- Evaporator Defrost Activity. (defrrpt)</div>	<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F11></div> <div style="margin-left: 20px;">- N/A</div>
<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><F6></div> <div style="margin-left: 20px;">- Valve Group Runtime. (evrtmpt)</div>	<div style="background-color: #ccc; padding: 5px; margin-bottom: 10px; display: flex; justify-content: space-between;"><ESC>ape</div> <div style="margin-left: 20px;">- From This Menu.</div>

On-line Using UDP Port 1012

Key Sequence:

T																	1
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160																	1
1	eLOGIC Evaporator Control Report. (evaprcrpt)																Date: 08-12-2020, Time: 15:07:18
2	Atlanta Cold Storage - Atlanta, GA																Page: 1
3																	
4																	
5	Unit	Tag	Description	Ctrl	Setpt.	Deadband	Liq	Suct	Suct	Fans				HS	SHS	Slid	FS
6								Clos	Open								
7																	
8	1	BLAST110	-20F Freezer	132	-20.00	2.00	304	305	0	1730	0	0	0	308	307	305	0
9							0	306	0					307	0	0	
10	2	BLAST1-2	-20F Freezer	135	-20.00	2.00	214	215	0	1746	0	0	0	218	217	215	0
11							0	214	0					217	0	0	
12	3	E3 PH-1	-20F Freezer	139	-10.00	2.00	224	225	0	1762	0	0	0	228	227	225	0
13							0	224	0					227	0	0	
14	4	E4 PH-1	-10F Freezer	143	-11.00	2.00	334	335	0	1778	0	0	0	338	337	335	0
15							0	334	0					337	0	0	
16	5	E5 PH-2	-10F Freezer	147	-14.00	2.00	344	345	0	1794	0	0	0	348	347	345	0
17							0	344	0					347	0	0	
18	6	E6 PH-2	-10F Freezer	151	-11.00	2.00	354	355	0	1810	0	0	0	358	357	355	0
19							0	354	0					357	0	0	
20	7	E7 PH-2	-10F Freezer	155	-10.00	2.00	364	365	0	1826	0	0	0	368	367	365	0
21							0	364	0					367	0	0	
22	8	E8 PH-2	-10F Freezer	159	-12.00	2.00	274	275	0	1842	0	0	0	278	277	275	0
23							0	274	0					277	0	0	
24	9	E9 PH-3	-10F Freezer	163	-11.00	0.50	504	505	0	1858	0	0	0	508	507	505	0
25							0	504	0					507	0	0	
26	10	E10 PH-3	-10F Freezer	167	-10.00	2.00	514	515	0	1874	0	0	0	518	517	515	0
27							0	514	0					517	0	0	
28	11	E11 PH-3	-10F Freezer	171	-10.00	2.00	524	525	0	1890	0	0	0	528	527	525	0
29							0	524	0					527	0	0	
30	12	E12 PH-3	-10F Freezer	175	-12.00	2.00	534	535	0	1906	0	0	0	538	537	535	0
31							0	534	0					537	0	0	
32	13	E13 PH-4	-10F Freezer	179	-10.00	2.00	544	545	0	1922	0	0	0	548	547	545	0
33							0	544	0					547	0	0	
34	14	E14 PH-4	-10F Freezer	183	-10.00	2.00	554	555	0	1938	0	0	0	558	557	555	0
35							0	554	0					557	0	0	
36	15	E15 PH-4	-10F Freezer	187	-10.00	2.00	564	565	0	1954	0	0	0	568	567	565	0
37							0	564	0					567	0	0	
38	16	PH4	-10F Freezer	191	-15.00	1.00	574	575	0	1970	0	0	0	578	577	575	0
39							0	574	0					577	0	0	
40	17	E17 PH-5	-10F Freezer	195	-15.00	2.00	584	585	0	1986	0	0	0	588	587	585	0
41							0	584	0					587	0	0	
42	18	E18 PH-5	-10F Freezer	199	-15.00	2.00	594	595	0	2002	0	0	0	598	597	595	0
43							0	594	0					597	0	0	
44	19	E19 PH-5	-10F Freezer	203	-10.00	2.00	604	605	0	2018	0	0	0	608	607	605	0
45							0	604	0					607	0	0	
46	20	E20 PH-5	-10F Freezer	207	-10.00	2.00	614	615	0	2034	0	0	0	618	617	615	0
47							0	614	0					617	0	0	
48	21	E21 PH-6	+35F Dairy	211	35.00	1.00	704	705	0	2050	0	0	0	708	707	705	0

Key Sequence:

0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	
1	eLOGIC Evaporator Defrost Schedule Report. (evapdrpt)										Date: 08-12-2020, Time: 15:08:20							
2	Atlanta Cold Storage - Atlanta, GA										Page: 1							
3	=====																	
4	(*) Denotes Active Times																	
5	Unit	Description	Day	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6									
6	=====	=====	=====	=====	=====	=====	=====	=====	=====									
7																		
8	1	-20F Freezer	Sunday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
9			Monday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
10			Tuesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
11			Wednesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
12			Thursday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
13			Friday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
14			Saturday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
15																		
16	Defrost Cycles In Seconds (Pump Down: 300) (Hot Gas: 900) (Dry Out: 120) (Bleed: 180) (Fan Delay: 120)																	
17																		
18	2	-20F Freezer	Sunday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
19			Monday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
20			Tuesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
21			Wednesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
22			Thursday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
23			Friday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
24			Saturday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
25																		
26	Defrost Cycles In Seconds (Pump Down: 300) (Hot Gas: 900) (Dry Out: 120) (Bleed: 180) (Fan Delay: 120)																	
27																		
28	3	-20F Freezer	Sunday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
29			Monday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
30			Tuesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
31			Wednesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
32			Thursday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
33			Friday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
34			Saturday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
35																		
36	Defrost Cycles In Seconds (Pump Down: 300) (Hot Gas: 900) (Dry Out: 120) (Bleed: 180) (Fan Delay: 120)																	
37																		
38	4	-10F Freezer	Sunday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
39			Monday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
40			Tuesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
41			Wednesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
42			Thursday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
43			Friday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
44			Saturday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									
45																		
46	Defrost Cycles In Seconds (Pump Down: 300) (Hot Gas: 900) (Dry Out: 120) (Bleed: 180) (Fan Delay: 120)																	
47																		
48	5	-10F Freezer	Sunday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00									

Key Sequence:

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170								
1	eLOGIC Evaporator Temperature Schedule Report. (evapcprc)							
2	Atlanta Cold Storage - Atlanta, GA							
3	Date: 08-12-2020, Time: 15:15:07							
4	Page: 1							
5	(*) Denotes Active Times							
6	Unit	Description	Day	Time 1	Time 2	Time 3	Time 4	Time 5
7								Time 6
8	1	-20F Freezer	Sunday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
9				0.00	0.00	0.00	0.00	0.00
10			Monday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
11				0.00	0.00	0.00	0.00	0.00
12			Tuesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
13				0.00	0.00	0.00	0.00	0.00
14			Wednesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
15				0.00	0.00	0.00	0.00	0.00
16			Thursday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
17				0.00	0.00	0.00	0.00	0.00
18			Friday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
19				0.00	0.00	0.00	0.00	0.00
20			Saturday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
21				0.00	0.00	0.00	0.00	0.00
22								
23	2	-20F Freezer	Sunday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
24				0.00	0.00	0.00	0.00	0.00
25			Monday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
26				0.00	0.00	0.00	0.00	0.00
27			Tuesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
28				0.00	0.00	0.00	0.00	0.00
29			Wednesday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
30				0.00	0.00	0.00	0.00	0.00
31			Thursday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
32				0.00	0.00	0.00	0.00	0.00
33			Friday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
34				0.00	0.00	0.00	0.00	0.00
35			Saturday	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
36				0.00	0.00	0.00	0.00	0.00
37								
38	3	-20F Freezer	Sunday	13:00:00*	00:00:00	00:00:00	00:00:00	00:00:00
39				-10.00	0.00	0.00	0.00	0.00
40			Monday	13:00:00*	00:00:00	00:00:00	00:00:00	00:00:00
41				-10.00	0.00	0.00	0.00	0.00
42			Tuesday	13:00:00*	00:00:00	00:00:00	00:00:00	00:00:00
43				-10.00	0.00	0.00	0.00	0.00
44			Wednesday	13:00:00*	00:00:00	00:00:00	00:00:00	00:00:00
45				-10.00	0.00	0.00	0.00	0.00
46			Thursday	13:00:00*	00:00:00	00:00:00	00:00:00	00:00:00
47				-10.00	0.00	0.00	0.00	0.00
48			Friday	13:00:00*	00:00:00	00:00:00	00:00:00	00:00:00

Key Sequence:

Refrigeration Valve Group Temperature Report/Checklist. (evtsmppt) Date: 08-12-2020, Time: 15:15:25							
Atlanta Cold Storage - Atlanta, GA Page: 1							
Num.	Valve Group Description	Tag	Current Value	Units	High Reading	Low Reading	Remarks
1	-20F Freezer	BLAST110	-20.64	Deg. F.	-19.83	-22.09	
2	-20F Freezer	BLAST1-2	-21.98	Deg. F.	-19.87	-22.10	
3	-20F Freezer	E3 WH-1	-11.40	Deg. F.	-9.90	-12.09	
4	-10F Freezer	E4 WH-1	-11.16	Deg. F.	-10.91	-12.20	
5	-10F Freezer	E5 WH-2	-14.07	Deg. F.	-10.23	-16.09	
6	-10F Freezer	E6 WH-2	-11.00	Deg. F.	-10.89	-13.08	
7	-10F Freezer	E7 WH-2	-10.86	Deg. F.	-9.96	-12.09	
8	-10F Freezer	E8 WH-2	-12.44	Deg. F.	-11.93	-14.09	
9	-10F Freezer	E9 WH-3	-11.00	Deg. F.	-10.91	-11.63	
10	-10F Freezer	E10 WH-3	-11.22	Deg. F.	-9.91	-12.14	
11	-10F Freezer	E11 WH-3	-10.13	Deg. F.	-9.91	-12.09	
12	-10F Freezer	E12 WH-3	-13.94	Deg. F.	-11.95	-14.10	
13	-10F Freezer	E13 WH-4	-11.47	Deg. F.	-6.19	-12.12	
14	-10F Freezer	E14 WH-4	-10.22	Deg. F.	-9.89	-12.11	
15	-10F Freezer	E15 WH-4	-11.87	Deg. F.	-9.91	-12.03	
16	-10F Freezer	WH4	-15.19	Deg. F.	-9.82	-16.14	
17	-10F Freezer	E17 WH-5	-16.95	Deg. F.	-9.92	-17.10	
18	-10F Freezer	E18 WH-5	-16.79	Deg. F.	-9.92	-17.09	
19	-10F Freezer	E19 WH-5	-11.28	Deg. F.	-9.90	-12.10	
20	-10F Freezer	E20 WH-5	-10.08	Deg. F.	-9.84	-12.10	
21	+35F Dairy	E21 WH-6	34.53	Deg. F.	35.14	33.85	

Key Sequence:

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170						
1	Defrost Activity Report. (defrpt)					
2	Atlanta Cold Storage - Atlanta, GA					
3	Date: 08-12-2020, Time: 15:14:10					
4	Page: 1					
5	-----					
6	Date	Start	End	Completion	Unit Description	Gcp.
7	-----	Time	Time	Status	-----	----
8	-----					
9	05-12-20	08:54:37	09:24:38	OK	+35F Dairy/Deli/Dry	26
10	05-12-20	09:40:37	10:10:38	OK	+35F Dairy/Deli/Dry	27
11	05-12-20	10:11:31	10:41:27	OK	-10F Freezer	13
12	05-12-20	11:02:56	11:32:52	OK	-10F Freezer	5
13	05-12-20	12:19:44	12:49:40	OK	+35F Dairy/Deli/Dry	26
14	05-12-20	14:30:05	15:00:01	OK	-10F Freezer	9
15	05-12-20	15:30:07	16:00:03	OK	+35F Dock	41
16	05-12-20	17:41:17	18:11:13	OK	+35F Dairy/Deli/Dry	26
17	05-12-20	18:11:32	18:41:28	OK	+35F Dairy/Deli/Dry	27
18	05-12-20	19:26:24	19:56:21	OK	-10F Freezer	11
19	05-12-20	20:46:09	No End	ASTHM	-10F Freezer	13
20	05-12-20	22:01:20	22:31:16	OK	+35F Dairy/Deli/Dry	26
21	05-12-20	02:39:19	03:09:16	OK	+35F Dairy/Deli/Dry	26
22	05-12-20	02:46:57	03:16:52	OK	+35F Dairy/Deli/Dry	27
23	05-12-20	04:45:29	05:15:25	OK	+35F Dock	40
24	05-12-20	07:07:18	07:37:14	OK	-10F Freezer	13
25	05-12-20	07:34:51	08:04:48	OK	+35F Dairy/Deli/Dry	26
26	05-12-20	10:46:36	11:16:32	OK	-10F Freezer	12
27	05-12-20	12:02:29	12:32:25	OK	+35F Dairy/Deli/Dry	27
28	05-12-20	12:14:35	12:44:31	OK	+35F Dairy/Deli/Dry	26
29	05-12-20	12:24:27	12:54:23	OK	-10F Freezer	7
30	05-12-20	14:30:05	15:00:01	OK	-10F Freezer	9
31	05-12-20	16:48:08	17:18:04	OK	+35F Dairy/Deli/Dry	26
32	05-12-20	16:51:42	17:21:38	OK	-10F Freezer	14
33	05-12-20	18:10:32	18:40:28	OK	-10F Freezer	13
34	05-12-20	21:02:54	21:32:50	OK	+35F Dock	41
35	05-12-20	21:22:49	21:52:45	OK	+35F Dairy/Deli/Dry	26
36	05-12-20	21:32:46	22:02:42	OK	+35F Dairy/Deli/Dry	27
37	05-14-20	02:05:09	02:35:06	OK	-10F Freezer	5
38	05-14-20	02:12:48	02:42:44	OK	+35F Dock	40
39	05-14-20	02:19:24	02:49:20	OK	+35F Dairy/Deli/Dry	26
40	05-14-20	05:21:33	05:51:30	OK	-10F Freezer	13
41	05-14-20	06:32:37	07:02:33	OK	+35F Dairy/Deli/Dry	27
42	05-14-20	07:16:28	07:46:19	OK	+35F Dairy/Deli/Dry	26
43	05-14-20	10:38:31	11:08:27	OK	-10F Freezer	11
44	05-14-20	11:28:27	11:58:23	OK	+35F Dairy/Deli/Dry	26
45	05-14-20	15:25:47	15:55:43	OK	+35F Dairy/Deli/Dry	27
46	05-14-20	15:41:22	16:11:18	OK	+35F Dairy/Deli/Dry	26
47	05-14-20	15:54:17	16:24:14	OK	-10F Freezer	13
48	05-14-20	20:24:21	20:54:17	OK	+35F Dairy/Deli/Dry	26

Key Sequence:

0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
1	Refrigeration Valve Group Runtime Report. (evrtmrpt) Date: 08-12-2020, Time: 15:14:29																1
2	Atlanta Cold Storage - Atlanta, GA Page: 1																
3																	
4																	
5	Num.	Valve Group Description	Tag	Total													
6				Hours													
7																	
8	1	-20F Freezer	BLAST110	2256.38													
9	2	-20F Freezer	BLAST1-2	8172.71													
10	3	-20F Freezer	E3 PH-1	2596.30													
11	4	-10F Freezer	E4 PH-1	2404.15													
12	5	-10F Freezer	E5 PH-2	2555.78													
13	6	-10F Freezer	E6 PH-2	7558.18													
14	7	-10F Freezer	E7 PH-2	4392.91													
15	8	-10F Freezer	E8 PH-2	1247.30													
16	9	-10F Freezer	E9 PH-3	8772.70													
17	10	-10F Freezer	E10 PH-3	1638.88													
18	11	-10F Freezer	E11 PH-3	9178.81													
19	12	-10F Freezer	E12 PH-3	5366.36													
20	13	-10F Freezer	E13 PH-4	616.63													
21	14	-10F Freezer	E14 PH-4	9132.43													
22	15	-10F Freezer	E15 PH-4	1152.95													
23	16	-10F Freezer	PH4	1259.42													
24	17	-10F Freezer	E17 PH-5	1256.60													
25	18	-10F Freezer	E18 PH-5	9177.73													
26	19	-10F Freezer	E19 PH-5	9119.65													
27	20	-10F Freezer	E20 PH-5	9131.40													
28	21	+35F Dairy	E21 PH-6	9115.91													
29	22	+35F Dairy/Deli/Dry	E22 PH-6	9119.61													
30	-Page Break																
31	Refrigeration Valve Group Runtime Report. (evrtmrpt) Date: 08-12-2020, Time: 15:16:29																
32	Atlanta Cold Storage - Atlanta, GA Page: 2																
33																	
34																	
35	Num.	Valve Group Description	Tag	Total													
36				Hours													
37																	
38	23	+35F Dairy/Deli/Dry	E23 PH-6	9122.70													
39	24	+35F Dairy/Deli/Dry	E24 PH-6	4136.13													
40	25	+35F Dairy/Deli/Dry	E25 PH-7	9328.41													
41	26	+35F Dairy/Deli/Dry	E26 PH-7	9163.11													
42	27	+35F Dairy/Deli/Dry	E27 PH-7	11798.23													
43	28	+35F Dairy/Deli/Dry	E28 PH-7	152.28													
44	29	+35F Wet Produce	E29 PH-8	9050.41													
45	30	+35F Wet Produce	E30 PH-8	4020.46													
46	31	+55F Dry Prod/Dk PH-9	E31/E32	9086.55													
47	32	+55F Dry Prod/Dk PH-9	E33/E34	7579.60													
48	33	+35F Dock	D1/D2	9097.33													

Key Sequence: