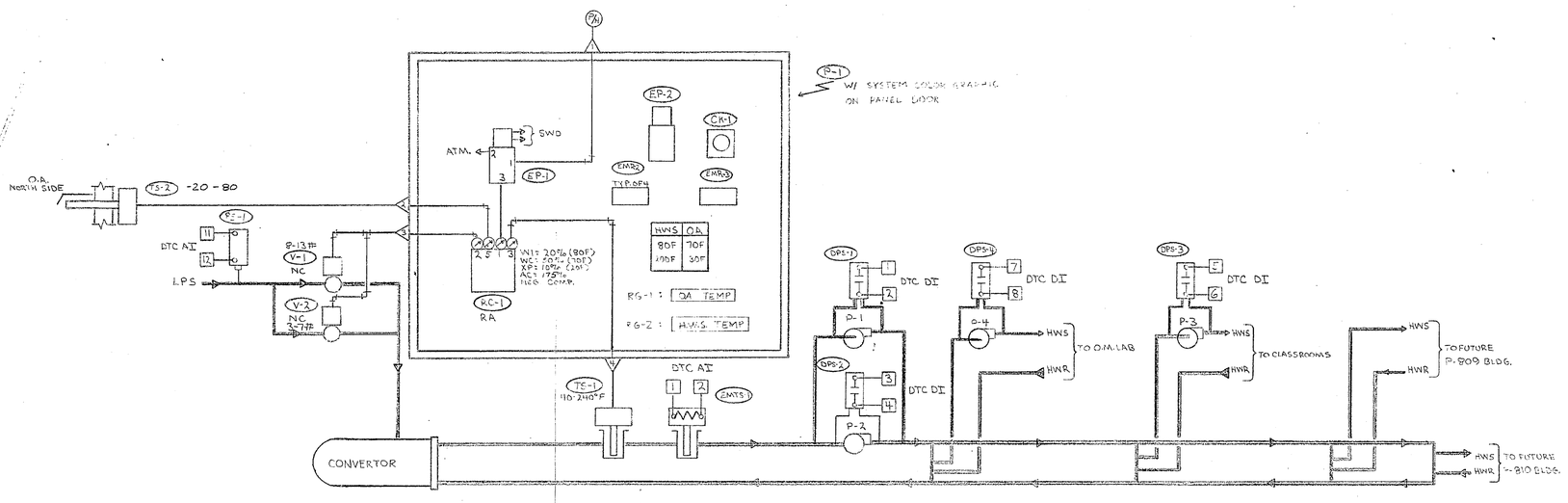
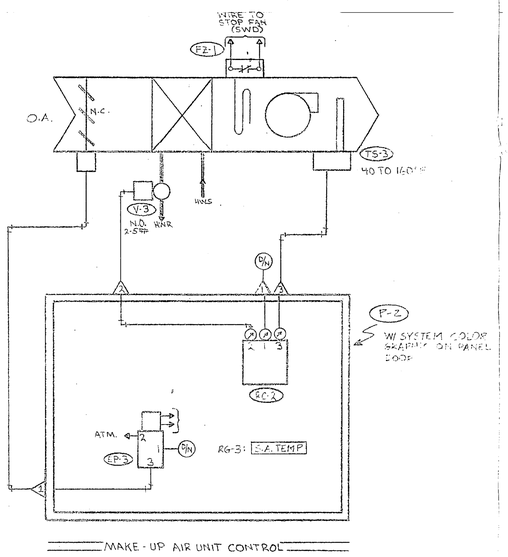
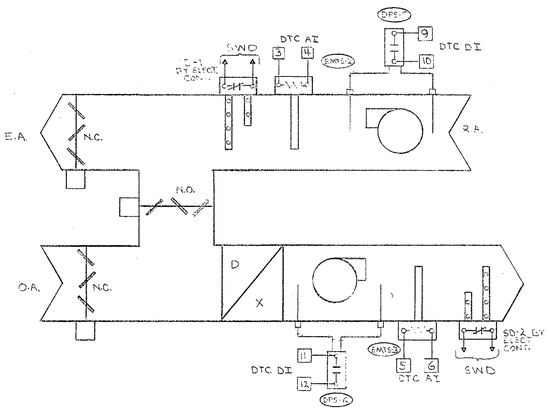


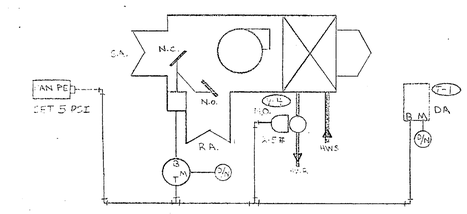
STEAM AND HOT WATER FLOW CONTROL DIAGRAM



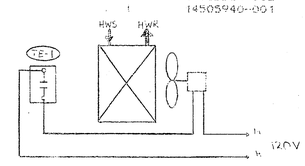
MAKE-UP AIR UNIT CONTROL



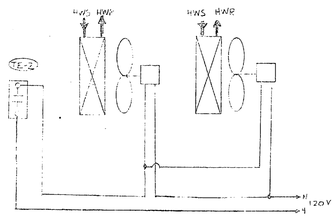
ROOFTOP AC UNIT G-1 EMCS CONTROLS



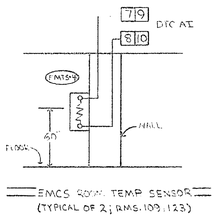
FAN POWERED VAV BOX CONTROL (TYPICAL OF 12)



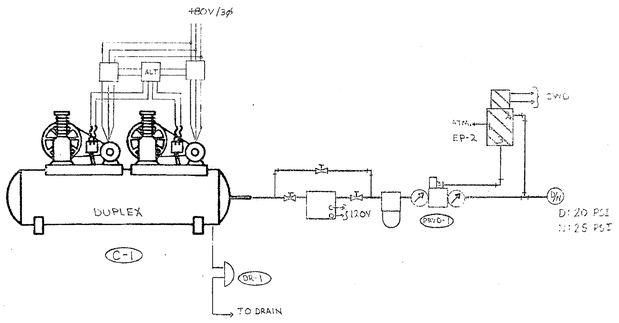
UNIT HEATER CONTROL (TYPICAL OF 5)



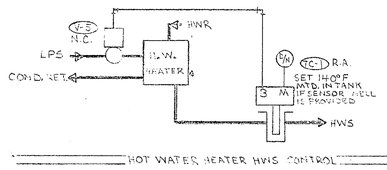
UNIT HEATER CONTROL (TYPICAL OF 2)



EMCS ROOM TEMP SENSOR (TYPICAL OF 2; RMS. 109, 123)



AIR SUPPLY



HOT WATER HEATER HWS CONTROL

BILL OF MATERIAL - Applied Inst.

CODE	QTY	PART NUMBER	DESCRIPTION
TS-1	1	LP914A1052	Temp. Sensor 40 to 240 Deg. F.
	1	3150469	Copper Well
TS-2	1	LP914A1250	Temp. Sensor -20 to 80 Deg. F.
TS-3	1	LP914A1003	Temp. Sensor -40 to 160 Deg. F.
FZ-1	1	L480C1084	Freezestat Man. Reset
V-1	1	V5011C1326	Steam Valve 25.0 CV 1 1/2" NPT
	1	MP953D1107	Valve Actuator RA 8-13 PSI
V-2	1	V5011C1268	Steam Valve 25.0 CV 1 1/4" NPT
	1	MP953D1172	Valve Actuator RA 3-7 PSI
V-3	1	VP525A1182	2-Way HW Valve 5.0 CV 2-5 PSI 3/4" NPT
V-4	12	VP531A1004	2-Way HW Valve 1.6 CV 2-5 PSI 1/2" NPT
C-1	1	8DR7	Curtis Air Comp Duplex 2 HP 480V/3P
DR-1	1	AK3485D	Tank Drain Kit
PRVD-1	1	HKN8210C	Air Dryer W/PRV & Filter Station Dual Pressure
T-1	12	TP971A1094	Room T'stat Day/Night D.A. 60-90 F.
	12	140024467-170	Plastic Cover Beige
TE-1,2	9	T651A1016	Elec. Room T'stat 45 to 85 Deg.F.
	3	665181008	Manual Switching Subbase Auto-Off-Fan
TE-2,3	2	T651A1269	Electric Room T'stat 56-94 Deg. F.
V-5	1	V5011C1201	Steam Valve 10.0 CV 1" NPT
	1	MP953D1131	Valve Actuator RA 4-11 PSI
TC-1	1	LP92081011	Temp. Controller -30 to 150 Deg. F.
EMCS:			
DPS-1 to 4	4	BKDEPD1HAA40	Differential Pressure Switch
DPS-5,6	2	CLEAFS405	Differential Pressure Switch
EMTS-1	1	T221C-5-8-1-A	BEC Temp. Transmitter 100 to 250 Deg. F.
	1	TW-20-S-8	BEC Thermowell SS
EMTS-2,3	2	T221B-3-8-1-A	BEC Temp. Transmitter 40 to 140 Deg. F.
PS-1	1	C-280E	Satra Pressure Transmitter 0 to 25 PSIG
EMTS-4	2	T221A-HB-1-0-1-A	BEC Temp. Transmitter 50 to 85 Deg. F.
EMR-1	1	RR2P24VDC	DPDT Relay 24 VDC

CODE	QTY	PART NUMBER	DESCRIPTION
PANEL 1:			
P-1	1	14505941-001	Half-Size Ring
	1	14505584-002	Half-Size Sub-Panel
	1	14505940-001	Half-Size Door
RC-1	1	RP92001045	Rec-Controller Dual Input RA W/Integral
EP-1,2	2	RP41881071	EP Relay 120V
CK-1	1	14505526-004	Timeclock 7-day 50 Hour Reserve
EMR-2,3	5	RR2P24VDC	DPDT Relay 24 VDC
	1	305929	TEMP. GAGE -40 TO 160F 1½ IN.
	1	305931	TEMP. GAGE 40 TO 240F 1½ IN
	2	305965	PRESSURE GAGE 0 TO 30 PSI 1½ IN.
PANEL 2:			
P-2	1	14505941-001	Half-Size Ring
	1	14505584-002	Half-Size Sub-Panel
	1	14505940-001	Half-Size Door
RC-2	1	RP9201033	Rec-Controller DA
EP-3	1	RP41881071	EP Relay 120V
	1	305929	TEMP. GAGE -40 TO 160F 1½ IN.
	2	305965	PRESSURE GAGE 0 TO 30 PSI 1½ IN.
PANEL 3:			
P-3	1	14505941-001	Half-Size Ring
	1	14505584-002	Half-Size Sub-Panel
	1	14505940-001	Half-Size Door

ARCHITECT: NAVFAC
ENGINEER: NAVFAC
CONTRACTOR: SNEEDEN INC.
SYSTEM ENGINEER: RICK MANALOTO
INSTALLATION SUPERVISOR:

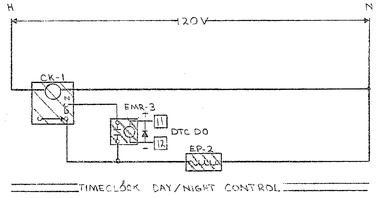
HONEYWELL, INC.
517 S. CHARON AMITY RD. CHARLOTTE, N.C.

Revisions	Date	Appd.
C		
B		
A		

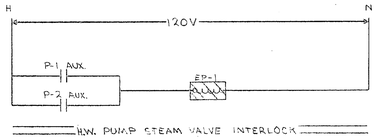
APPLIED INSTRUCTION BLDG
CAMP LEJEUNE, N.C.

Supersedes	Drawn By: GD/RM	Date 4-16-87	DRAWING NUMBER 939-87611-IX1	Rev.
Superseded By	Approved By	Sheet 1 Of 2		

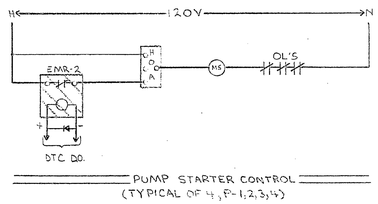
81-3288-012 (Rev. 5/83)



TIMECLOCK DAY/NIGHT CONTROL

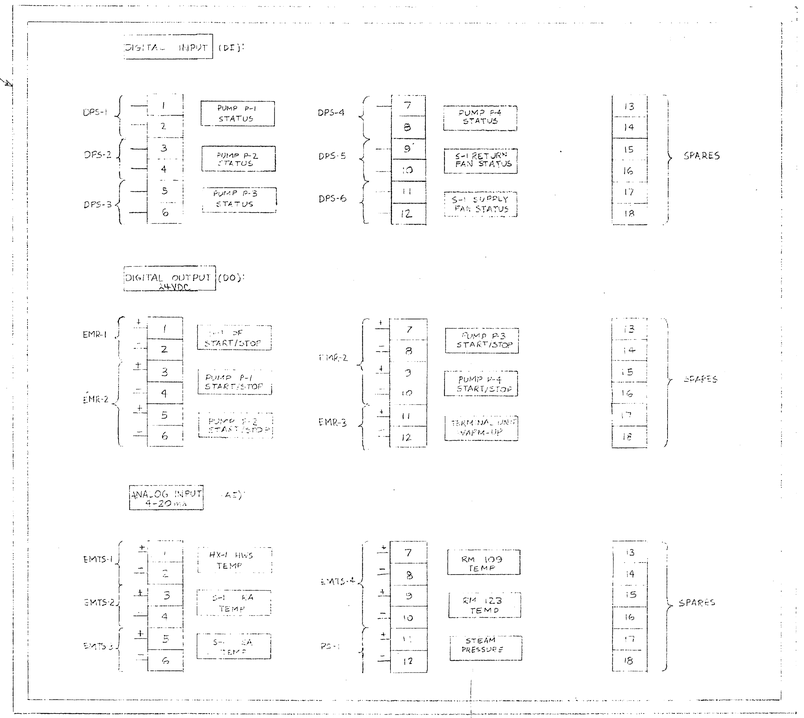


H.W. PUMP STEAM VALVE INTERLOCK

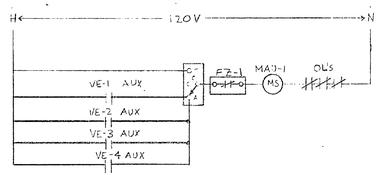


PUMP STARTER CONTROL
(TYPICAL OF 4, P-1,2,3,4)

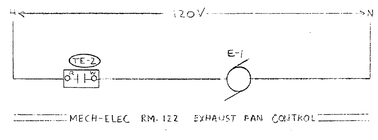
NOTE: STARTERS TO BE FURNISHED BY ELECTRICAL CONTR.



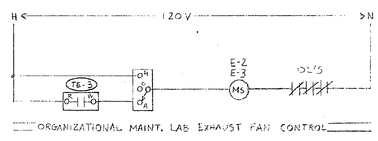
DTC LAYOUT



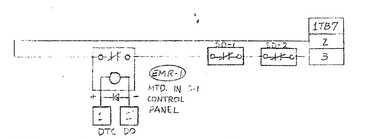
MAKE-UP AIR UNIT CONTROL



MECH-ELEC RM. 122 EXHAUST FAN CONTROL



ORGANIZATIONAL MAINT. LAB EXHAUST FAN CONTROL



ROOFTOP UNIT S-1 EMCS START/STOP CONTROL

TAG

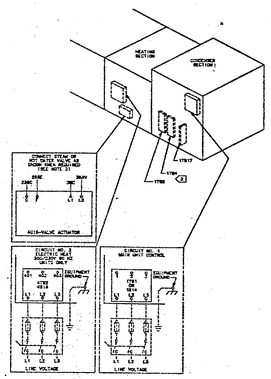
DRAWN DATE: 12-10-85	FILE NO.: PL-UN-RT-SAHC-SW-104.02	REPLACES: SAHC-SW-104.01	SAHC-SW-104.02

TRANE

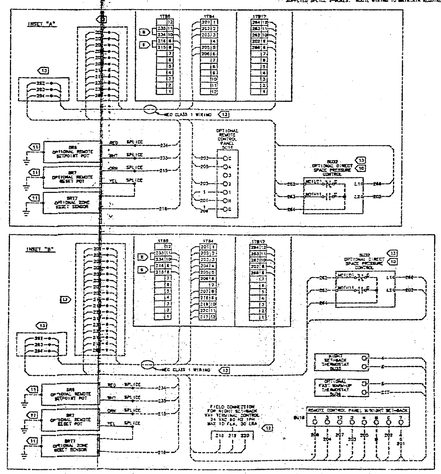
ROOFTOP PACKAGED AIR CONDITIONER
FIELD WIRING
SUPPLY AIR VAV
SAHC, SBHC, SEHC, SFHC, SLHC, SSHC, SXHC 40 THRU 80 TON

SUBMITTAL

NOTES: 1. DTC LARGE ENOUGH TO ACCOMODATE 200% TERMINAL BLOCK SPACE
2. TERMINAL BLOCKS FOR 150% OF INPUT AND OUTPUT ARE PROVIDED



ROOFTOP UNIT S-1 CONTROL WIRING



ARCHITECT: NAVFAC
ENGINEER: NAVFAC
CONTRACTOR: SNEDEN INC.
SYSTEM ENGINEER: NICK MANAROTO
INSTALLATION SUPERVISOR:

SEQUENCE OF OPERATION - Applied Inst.

MAKEUP AIR UNIT

When any one or more of the carbon monoxide exhaust fans is energized, the makeup air fan will be energized.

Outdoor air damper will open.

Discharge air temperataure sensor/controller will modulate the hot water coil valve to maintain 65 Deg. F.

Low temperature ductstat will stop the fan on a fall in temperature to 38 Deg. F.

When all of the carbon monoxide exhaust fans are de-energized the makeup air unit will be de-energized.

The outdoor damper will close.

The makeup air fan may be energized using the "hand" position on the starter. (HOA)

UNIT HEATER

The space thermostat will cycle the unit heater fan to maintain temperature (70 Deg. F Nom).

The manual switch built into the thermostat allows the fan to be energized for air circulation purposes.

FAN POWERED VARIABLE VOLUME UNITS

Space thermostat will provide a 3 to 13 PSIG signal to the unit and the hot water coil valve to maintain temperature (70 Deg. F). All controls, sequencing devices, pneumatic-electric relay, etc., will be provided with the unit. The temperature control contractor will furnish the valve with a spring range corresponding to the unit control sequence.

During the night or unoccupied cycle, the box fan will be de-energized. On a fall in temperature, the fan will be energized and the valve will be open. On a rise in temperature, the fan will be de-energized and the valve will be closed.

Night setback temperature 55 Deg. F.

STEAM-TO-HOT WATER CONVERTER

Temperature controller will modulate in sequence the one third capacity steam valve (first) and the two thirds capacity steam valve (second). The controller's proportional plus integral control mode will function to provide an essentially constant hot water supply temperature at any given temperature setpoint. The supply temperature will be varied from outside temperature according to the schedule.

Hot water pump de-energized.

Steam valves close.

WARMUP CYCLE

The warmup cycle will be initiated by the time clock one hour prior to occupancy time. An electric-pneumatic relay connected to the time clock will trigger the day-night signal line. All of the space thermostats are restored to the day temperature setpoint, which causes the fans in the terminal units to run with the heating coil valves open, until each thermostat is satisfied.

ROOF TOP UNIT

Supply and return fan will start thru the unit's own time clock.

Static pressure controller will maintain static pressure setting by modulating inlet vanes on the supply and return fans.

Leaving air temperature will be maintained from a discharge air sensor.

When discharge air temperature rises above discharge air setting the economizer dampers will modulate to maintain discharge air temperature setting. If the discharge air temperature continues to rise then mechanical refrigeration will start and the economizer will go to minimum outdoor air temperature setting.

The reverse action will take place as the discharge air temperature drops below the discharge air setting.

HW PUMPS

Pumps will be manually started and stopped. Either pump P-1 or P-2 will run all the time. Pumps P-3 and P-4 will also be running all the time.

EXHAUST FANS

Exhaust fans VE-1 to 4 will be manually started and stopped. Exhaust fans E-1 to 3 will be controlled by room thermostats.

HONEYWELL, INC.

C				517 S. SHARON AMITY RD., CHARLOTTE, N.C.
B				
A				APPLIED INSTRUCTION BLDG.
Revisions		Date	Appd.	CAMP LEJEUNE, N.C.

Supersedes	Drawn By: MK/RM	Date 4-16-87	DRAWING NUMBER 939-2AI1-2XI		Rev.
Superseded By	Approved By:	Sheet 2 Of 2			

61-3288-012 (Rev. 5/83)