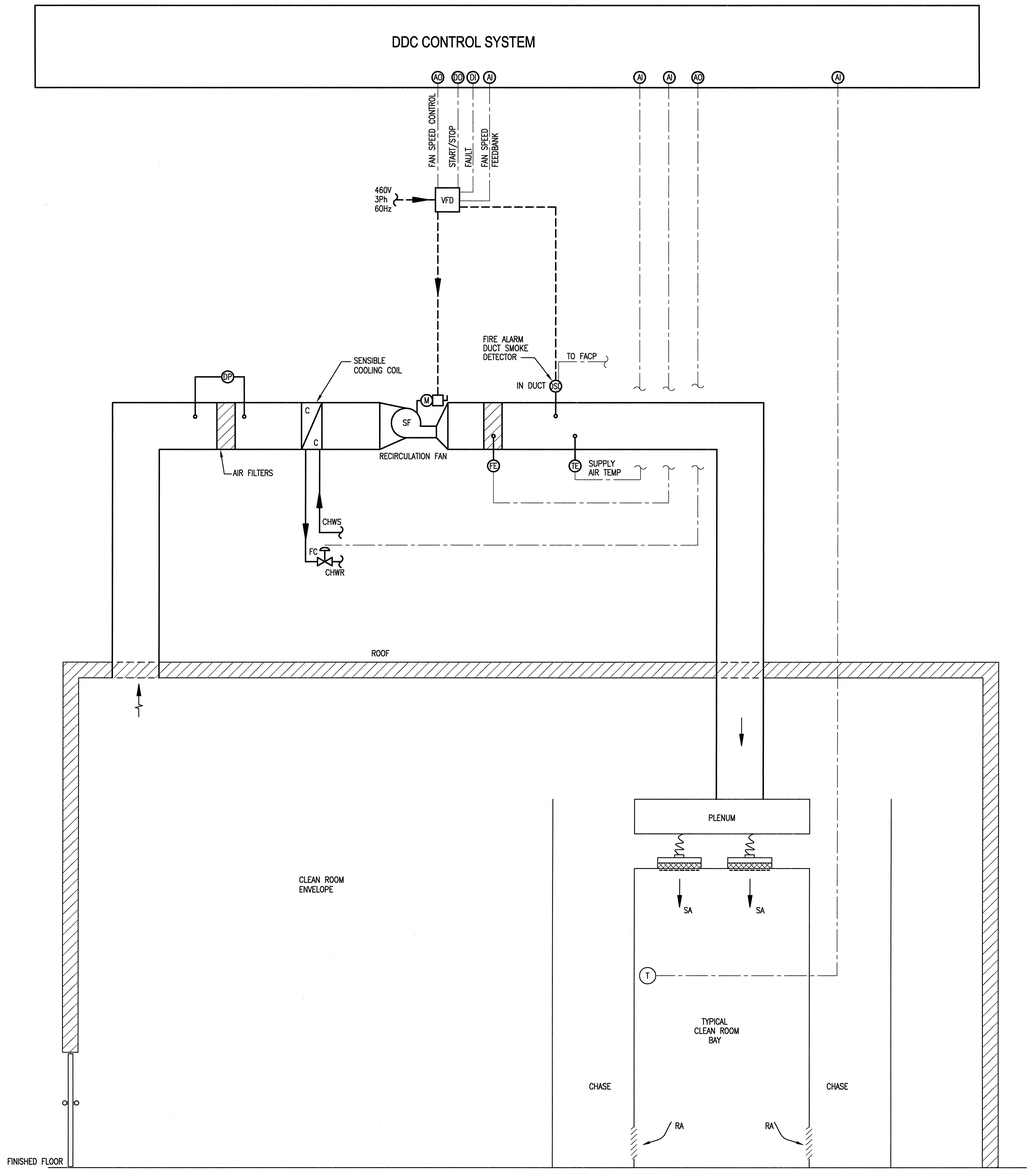
CONTROL POINT LIST - AH-CN-01 THRU AH-CN-08

CENTRAL LABORTATORY OFFICE BUILDING	CONNECTED POINTS																													SOFTWARE													
	OUTPUT FROM DDC									INPUT TO DDC																				APPLICATION PROGRAMS													
	DIGITAL					ANALOG				DIGITAL							ANALOG					DIGITAL			ANALOG																		
POINT DESCRIPTION	GRAPHIC DISPLAY	CONTROL RELAY	SOLENOID	HAND/OFF/AUTO	(START/STOP)	PROPORTIONAL CONTROL	FAN SPEED			PRESSURE SWITCH	DIFFERENTIAL PRESSURE SWITCH	FLOW SWITCH	AUXILLARY CONTACT	PULSE	GENERAL ALARM	FREEZE PROTECTION	TEMPERATURE °F	% RELATIVE HUMIDITY	DUCT STATIC PRESSURE	FAN SPEED FEEDBACK	FLOW	CONTACT CLOSURE			HIGH LIMIT	LOW LIMIT	RUN TIME	BTU	SCHEDULED START/STOP	OPTIMUM STOP/START	DUTY CYCLING	DEMAND LIMITING		SUMMER WINTER	DAY/NIGHT SETBACK	ECONOMIZER	ENTHALPY	VENTILATION/RECIRCULATION	CHILLER SELECTION	CHILLED WATER RESET	LIGHTING CONTROL		FAILURE MODE
AIR HANDLER AH-CN-01 THRU AH-CN-08	X																																									
SUPPLY FAN VFD.					X			X					X							X																						X
COOLING COIL						X																																			X
SUPPLY AIR FLOW																					X			X	X	X																X
SUPPLY AIR TEMP																	X																									
SPACE TEMPERATURE																	X																									



CLEANROOM RECIRCULATION AIR CONTROL DIAGRAM (TYPICAL FOR SYSTEMS AH-CN-01 THUR AH-CN-08)

NO SCALE HDG-15016-8

SEQUENCE OF OPERATION

GENERAL:
THE SYSTEM SHALL CONSIST OF AN AIR HANDLING UNIT WITH SENSIBLE CHILLED WATER COOLING COILS. THE SYSTEM SHALL HAVE ELECTRONICALLY OPERATED VALVES AND ITS OWN DDC STAND ALONE LOCAL CONTROL STATION (LCS). ALL SETPOINTS SHALL BE ADJUSTABLE.

TOLERANCES AND SETPOINTS:
SPACE COOLING TOLERANCE: 67 – 69'F
SPACE COOLING SETPOINT: 68'F
SUPPLY AIR SETPOINT: 68'F

SYSTEM START/STOP CONTROL:
THE UNITS SHALL BE STARTED AND STOPPED VIA THE BUILDING DDC CENTRAL CONTROL OR THE LOCAL CONTROL STATION (LCS). WHEN A FAN SYSTEM IS STARTED, THE FOLLOWING EVENTS SHALL OCCUR:
1. ITS RESPECTIVE CONTROL SYSTEM SHALL BE ENABLED.
2. THE SUPPLY AIR FAN SHALL START.
3. CONFIRMATION OF AIR FLOW SHALL BE BY AIR FLOW MEASUREMENT.

WHEN THE FAN SYSTEM IS SHUTDOWN, THE FOLLOWING EVENTS SHALL OCCUR:
1. THE SUPPLY FAN SHALL STOP.
2. THE COOLING COIL CONTROL VALVE SHALL RETURN TO ITS NORMAL POSITION (CLOSED).
3. ITS RESPECTIVE CONTROL SYSTEM SHALL BE DISABLED.

A HAND (OFF) AUTO SWITCH AT THE VFDS SHALL OVERRIDE THE SYSTEM FOR MAINTENANCE USE.

SUPPLY AIR TEMPERATURE CONTROL:

THE SUPPLY AIR TEMPERATURE SENSOR, IN THE AHU DISCHARGE PLENUM, SHALL PROVIDE INPUT TO THE DDC CONTROL SYSTEM. THE SYSTEM SHALL MODULATE THE COOLING COIL 2-WAY CONTROL VALVE AS REQUIRED TO MAINTAIN THE SUPPLY AIR TEMPERATURE AT 68'F

SPACE TEMPERATURE:

A TEMPERATURE SENSOR IN THE CLEAN ROOM BAY SHALL PROVIDE INPUT TO THE CONTROL SYSTEM FOR MONITORING PURPOSES.

DUCT SMOKE DETECTOR CONTROL:

WHENEVER THE SUPPLY AIR SMOKE DETECTOR IS ACTIVATED, AND A SIGNAL IS SENT TO THE FIRE ALARM PANEL, THE FOLLOWING EVENTS SHALL OCCUR:
1. AN ALARM SHALL BE ANNUNCIATED AT THE FIRE ALARM PANEL.
NC CONTACTS BY FIRE ALARM CONTRACTOR. CIRCUITRY TO PERFORM CONTROLS BY HVAC CONTRACTOR.

NUMBER OF SECTION OR DETAIL
DRAWING ON WHICH SECTION OR DETAIL IS SHOWN OR TAKEN
SECTION AND DETAIL KEY

THIS DOCUMENT CONTROLLED BY
CHANGE CONTROL SYSTEM
ENGINEERING PROCEDURE

REV	CHANGE TYPE	CHANGE CONTROL SYSTEM	CHANGE REQUEST NUMBER	DESCRIPTION	DSN	CHK	DEPT	DATE	PE	DATE	PJ	DATE	REQ	DATE	UTB	DATE	RPE	RPE NO	DATE	ST	CV	EC	EE	EM	IE	M	PD	SE	AR
0				CERTIFIED FOR CONSTRUCTION – 12/9/02	JG	BWJ		12/9/02									BWJ	105869	12/9/02	BZ	AW	BWJ	AK	IM	DM	–	BWJ	–	TW
REVISION OR ISSUE PURPOSE								REVISION APPROVALS												SQUAD CHECK								

RPE
BRUCE W. JOHNSON REGISTERED ENGINEER NO. 001910 STATE OF TENNESSEE
REV. 0 DATE 12/9/02 UTB JRL
DRAWING APPROVALS

DSN
DRW
CHK
DEPT
PE CLG 12/9/03
PJ JS 12/9/03
REQ 12/9/03

ORNL DRAWING NUMBER:

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PROJECT NAME:
CENTER FOR NANOPHASE MATERIALS SCIENCES
CLEANROOM RECIRCULATION AIR CONTROL DIAGRAM

1	48	49	50	PLANT	BLDG	FL	SH.	OF	TYPE	CLASS
3	H	X	X	8	8610		1	1	D	U
51		52		53	A/E DRAWING NUMBER:					REV
NC		NA			H8.11.43					0