HVAC LINES

- DUCTED AIR FLOW
- NONDUCTED AIR FLOW
- FLOW (CFM) — AIR FLOW TO SPACE
- FLOW (CFM) — AIR FLOW FROM SPACE
- TRANSFER AIR

HVAC EQUIPMENT OR SPECIALTIES

- BACK DRAFT DAMPER (B.D.D.)
- FIRE DAMPER F-FUSIBLE LINK (SHOWN) E-ELECTRO-THERMO LINK
- OPPOSED BLADE DAMPER (O.B.D.)
- PARALLEL BLADE DAMPER (P.B.D.)
- EXHAUST AIR TORNADO DAMPER
- SUPPLY AIR TORNADO DAMPER
- BUTTERFLY TYPE DAMPER — ND — NO - NORMALLY OPEN (SHOWN) NC - NORMALLY CLOSED
- E — FLOW INTERRUPTER E-ELECTRO THERMAL LINK(SHOWN) F-FUSIBLE LINK
- CHECK DAMPER
- FLUID SIDE — HVAC HEAT EXCHANGER — REFRIGERANT SIDE
- OAI — OUTSIDE AIR INTAKE LOUVER
- DISCHARGE LOUVER
- PRE-FILTER/ HIGH-EFFICIENCY FILTER
- HEPA FILTER
- CARBON FILTER
- TP — AIRFLOW MEASURING STATION WITH TEST PORT
- MB — MIXING BOX-WITH HOT AND COLD DUCT MODULATING DAMPERS. OPERATING PROPORTIONALLY OPPOSITE TO EACH OTHER. DAMPERS SHALL FAIL OPEN IN THE COLD DUCT AND FAIL CLOSE IN THE HOT DUCT (H, C, FC, FO)
- REFRIGERATION COMPRESSOR
- PACKAGED AIR CONDITIONING (A.C.) UNIT
- H — HUMIDIFIER
- FSL — THERMAL DISPERSION TYPE
- E — HALON ISOLATION DAMPER E-ELECTRO THERMAL LINK(ETL)
- CENTRIFUGAL FAN
- VANEAXIAL OR TUBEAXIAL FAN
- PROPELLER FAN
- CFM — CUBIC FEET PER MINUTE
- SCFM — STANDARD CUBIC FEET PER MINUTE
- SA — SUPPLY AIR
- RA — RETURN AIR
- EA — EXHAUST AIR
- AHU — AIR HANDLING UNIT
- CDU — CONDENSING UNIT
- LLSV — REFRIG. LIQUID LINE SOLENOID VALVE SHOWN IN DE-ENERGIZED POSITION
- REFRIG. LIQUID LINE SIGHT GLASS
- THERMOSTATIC EXPANSION VALVE WITH SENSING BULB
- UNIT HEATER (ELECTRIC)
- A/B — (A) E-ELECTRIC CH-CHILLED WATER DX-DIRECT EXPANSION ECW-ESSENTIAL COOLING WATER CCW-COMPONENT COOLING WATER (B) HC-HEATING COIL CC-COOLING COIL
- ROOF EXHAUSTER
- XE — SMOKE DETECTOR
- DS — SOUND ATTENUATOR OR SILENCER
- AIR SAMPLING STATION
- XXX — ROOM NUMBER
- XX — EQUIPMENT KEY NUMBER

SIGNALS AND LINES

- INSTRUMENT AIR SUPPLY OR PNEUMATIC SIGNAL IN-INSTRUMENT NITROGEN SUPPLY OR PNEUMATIC SIGNAL
- INSTRUMENT CAPILLARY TUBING (FILLED SYSTEM)
- ELECTRICAL LINE
- HYDRAULIC SIGNAL LINE
- IMPULSE LINE TO INSTRUMENT
- ELECTROMAGNETIC OR SONIC (WITHOUT WIRING OR TUBING)

INSTRUMENT IDENTIFICATION

- NY Z — LOCALLY MOUNTED INSTRUMENT
- NY Z — .6" DIAMETER FOR ALL INSTRUMENT BALLOONS
- NY Z — CONTROL ROOM PANEL MOUNTED INSTRUMENT
- NY Z, ZLP XXX — LOCAL PANEL INDICATORS/RECORDER

NOMENCLATURE FOR Y, Z, AND N

- Y - FUNCTIONAL IDENTIFICATION
- Z - LOOP IDENTIFICATION
- N - UNIT NUMBER (SEE NOTE (D) BELOW)

CD 3479B, AAA, SY, W — COMPUTER INPUT POINT (.5" FLAT TO FLAT HEXAGON)

SY- SYSTEM DESIGNATOR (IF DIFFERENT FROM DRAWING OR IF NEEDED FOR UNDERSTANDING)

AAA - COMPUTER SYSTEM IDENTIFICATION
- (BLANK) - PLANT COMPUTER OR QUALIFIED DISPLAY PROCESSING SYSTEM.
- QUALIFIED DISPLAY PROCESSING SYSTEM (QDPS) IS REPRESENTED BY A LINE THRU MIDDLE OF HEXAGON
- RMS - RADIATION MONITORING SYSTEM COMPUTER
- ERF - EMERGENCY RESPONCE FACILITIES DATA ACQUISITION AND DISPLAY SYSTEM (ERF DADS)
- CDMS - CHEMISTRY DATA MANAGEMENT SYSTEM.

CD- C PROCESS FUNCTION, D COMPUTER POINT TYPE — REFER TO APPROPRIATE I/O LIST FOR EXPLANATION (EXCEPT RMS SYSTEM)

3479B- LOOP NUMBER (4 OR 5 CHARACTERS)

NOTES:
1. BREAK HEXAGON IF LOOP NUMBER EXTENDS OUTSIDE HEXAGON (EXCEPT RMS SYSTEM)
2. FOR CDMS, COMPUTER POINT NUMBER IS IDENTIFIED.

W- INDICATES SEPARATION GROUP OR TRAIN (A,B,C,D OR N) ON QDPS POINTS ONLY (EXCEPT RMS SYSTEM)

PLANT COMPUTER (5 OR 6 CHARACTERS)	ERF,QDPS,RMS COMPUTERS (9 CHARACTERS)
ANALOG POINTS WILL BE OF THE FORM OF ONE ALPHA AND 4 DIGITS. (REF PLANT COMPUTER ANALOG I/O LIST - SZ-01-9-Z-47513)	ANALOG AND DIGITAL POINTS HAVE THE SAME STRUCTURE WHICH IS 4 ALPHA AND 4 DIGITS FOLLOWED BY 1 ALPHA WHICH IS USED IF NEEDED. (REF ERF DADS I/O LIST - S-Z55-1-Z-47517)
DIGITAL POINTS WILL BE OF THE FORM OF 2 ALPHA AND 4 DIGITS. (REF PLANT COMPUTER DIGITAL I/O LIST -SZ-01-9-Z-47512).	

- A, ZLP XXX — LOCAL ANNUNCIATION - THE DESIGNATIONS HI, HI-HI, HI-LO, LO, LO-LO, EMPTY, OPEN, CLOSED, ETC. SHALL BE PLACED ADJACENT TO THE SYMBOL AND AT THE 10 O'CLOCK POSITION TO IDENTIFY THE TYPE OF ANNUNCIATION. THERE WILL BE NO COMPUTER LOGGING OF LOCAL ANNUNCIATOR POINTS.
- S — MAIN PLANT ANNUNICATOR AND COMPUTER INTERFACE FOR SINGLE INPUT - THE DESIGNATIONS HI-HI, HI, HI-LO, LO, LO-LO, EMPTY, TRBL, ETC. SHALL BE PLACED ADJACENT TO THE SYMBOL AND AT THE 10 O'CLOCK POSITION TO IDENTIFY THE TYPE OF ANNUNCIATION. EVERY ANNUNCIATION WILL BE LOGGED IN A COMPUTER.
- M — MAIN PLANT ANNUNICATOR AND COMPUTER INTERFACE FOR MULTIPLE INPUTS - THE DESIGNATIONS HI-HI, HI, HI-LO, LO, LO-LO, EMPTY, TRBL, ETC. SHALL BE PLACED ADJACENT TO THE SYMBOL AND AT THE 10 O'CLOCK POSITION TO IDENTIFY THE TYPE OF ANNUNCIATION. EVERY ANNUNCIATION WILL BE LOGGED IN A COMPUTER.

INSTRUMENT IDENTIFICATION TABLE

1	2	3	4	5	6	7	8	9	10	11	12	13	14
N	1	A	P	D	1	S	H	3	1	0	0	A	

- 1 - SEPARATION GROUP
- 2 - UNIT NUMBER
- 3, 4 - SYSTEM DESIGNATOR
- 5, 6, 7, 8, 9 - INSTRUMENT FUNCTION CODE
- 10, 11, 12, 13 - STRING NUMBER
- 14 - SUFFIX (IF NEEDED, SEE NOTE (E) F)

GENERAL NOTES:

(A) EACH STRING OF INSTRUMENTATION WILL HAVE A UNIQUE STRING NUMBER (A STRING IS DEFINED AS TWO OR MORE INSTRUMENTS TIED TOGETHER NOT BY THE PROCESS, TO MONITOR OR CONTROL A SINGLE POINT.)

(B) SINGLE ELEMENT INSTRUMENTS MONITORING THE SAME PROCESS POINT WILL HAVE A COMMON STRING NUMBER.

(C) INSTRUMENTS MONITORING A COMMON PIECE OF EQUIPMENT SUCH AS A PUMP, HEATER, COOLER ETC. CAN HAVE A COMMON STRING NUMBER. IT IS PERMISSIBLE TO SEPARATE SINGLE ELEMENT INSTRUMENTS MONITORING A COMMON PIECE OF EQUIPMENT AS TO SUCTION, DISCHARGE INLET, OR OUTLET IF IT IS CLEARER TO DO SO.

(D) UNIT NUMBERS NEED NOT BE SHOWN IN EACH INSTRUMENT BALLOON. IF NOT SHOWN THE P&ID SHALL CONTAIN THIS NOTE:

NOTE: ALL INSTRUMENT TAG NUMBERS SHOWN ON THIS DIAGRAM ARE PREFIXED BY THE UNIT NUMBER _____ UNLESS OTHERWISE NOTED

UNIT NUMBER ASSIGNMENTS
- 1 - UNIT 1
- 2 - UNIT 2
- 0 - SHARED SYSTEM

(E) LOCAL PANEL MOUNTED INSTRUMENTS AND ANNUNCIATOR POINTS WILL BE IDENTIFIED WITH THE PROPER LOCAL PANEL NUMBER. MAIN CONTROL ROOM ANNUNCIATOR POINTS WILL NOT BE IDENTIFIED AS TO THE ACTUAL CONTROL PANEL LOCATION.

(F) WHEN THERE ARE TWO OR MORE INSTRUMENTS WITH THE SAME FUNCTIONAL IDENTIFICATION ON ONE STRING THE ADDITIONAL INSTRUMENTS WILL BE GIVEN A SUFFIX A, B, C, ETC.

(G) TEXT LOCATIONS AROUND INSTRUMENT BALLOONS SHALL BE STANDARDIZED AS SHOWN IN THE SKETCH BELOW.

J-1, J-2, J-3, J-4, J-5, J-6, J-7, J-8

- J-1 ISA CODE (INSTRUMENT TYPE)
- J-2 STRING NUMBER
- J-3 VENDOR DESIGNATOR
- J-4 SYSTEM DESIGNATOR
- J-5 FUNCTION (EG 0)
- J-6 SEPARATION GROUP
- J-7 ASME TEST SYMBOL(⊥ OR ±, SEE NOTE (I))
- J-8 PANEL NO.

EXAMPLE:

* ZLP 123, ILI 3100 A, AS, N

- 1 - UNIT 1 (SEE NOTE D)
- LI - LEVEL INDICATOR
- 3100A - STRING NO.
- * - FURNISHED WITH VENDOR EQUIPMENT
- AS - AUXILIARY STEAM SYSTEM (SEE NOTE (H))
- N - SEPARATION GROUP N
- ZLP 123 - PANEL NO. 123

WRITTEN: N1AS LI 3100A

(H) SYSTEM DESIGNATOR NEED NOT BE SHOWN OUTSIDE EACH BALLOON IF THE INSTRUMENT BELONGS TO THE MAJOR SYSTEM REPRESENTED ON THE P&ID. ALL P&ID'S WILL CONTAIN THIS NOTE:

ALL INSTRUMENTS ON THIS P&ID HAVE SYSTEM DESIGNATOR __ __ UNLESS OTHERWISE NOTED.

(I) ⊥: INSTRUMENT FOR ASME TEST ONLY.
±: INSTRUMENT FOR ASME TEST PLUS NORMAL USE.

(J) SEPARATION GROUP NEED NOT BE SHOWN OUTSIDE EACH BALLOON IF THE INSTRUMENT BELONGS TO THE MAJOR SEPARATION GROUP REPRESENTED ON THE P&ID. ALL P&ID'S WILL CONTAIN THIS NOTE:

ALL INSTRUMENTS ON THIS P&ID HAVE SEPARATION GROUP DESIGNATOR ____ UNLESS OTHERWISE NOTED.

INSTRUMENT FUNCTIONS ABBREVIATIONS

LETTER	FIRST LETTER: VARIABLE	SUCCEEDING LETTERS (4): READOUT, PASSIVE FUNCTION, OUTPUT FUNCTION, OR MODIFIER
A	ANALYSIS (1)	ALARM
B	BURNER FLAME	
C	CONDUCTIVITY	CONTROL OR CONTROLLER
D	DENSITY	DIFFERENTIAL
E	VOLTAGE	ELEMENT
F	FLOW RATE	RATIO
G	GAGING	GLASS (UNCALIBRATED)
H	HAND (MANUAL)	HIGH
I	CURRENT	INDICATOR
J	POWER	SCANNER
K	TIME	CONTROL STATION
L	LEVEL	LOW OR LIGHT
M	MOISTURE	MIDDLE (INTERMEDIATE)
N	NUCLEAR	
O		ORIFICE (RESTRICTION)
P	PRESSURE	POINT (TEST CONNECTION)
Q	QUANTITY	INTEGRATED OR TOTALIZE
R	RADIATION	RECORDER OR PRINT OR RECEIVER
S	SPEED OR FREQUENCY	SWITCH OR SAFETY
T	TEMPERATURE	TRANSMITTER
U	MULTIVARIABLE	MULTIFUNCTION
V	VISCOSITY	VALVE DAMPER OR LOUVER
W	WEIGHT	WELL
X	UNCLASSIFIED (2)	UNCLASSIFIED
Y	VIBRATION	RELAY OR COMPUTE (3)
Z	POSITION	ACTUATOR OR DRIVE UNIT

NOTES FOR INSTRUMENT ABBREVIATIONS

(1) THE CHEMICAL FORMULA OR ANALYSIS BEING MEASURED TO BE DEFINED OUTSIDE THE TAGGING BALLOON AT THE J-5 POSITION.

(2) TYPE OF MEASUREMENT TO BE DEFINED OUTSIDE OF TAGGING BALLOON AT THE J-5 POSITION OR BY SELF DEFINED SYMBOL.

(3) TYPE OF RELAY OR FUNCTION TO BE DEFINED OUTSIDE OF TAGGING BALLOON AT THE J-5 POSITION.

TYPICAL FUNCTIONS AS FOLLOWS:

- A/F - ANALOG TO FREQUENCY
- F/A - FREQUENCY TO ANALOG
- E/P - ELECTRIC TO PNEUMATIC
- I/P - CURRENT TO PNEUMATIC
- P/E - PNEUMATIC TO ELECTRIC
- P/I - PNEUMATIC TO CURRENT
- A/D - ANALOG TO DIGITAL
- D/A - DIGITAL TO ANALOG
- √ - SQUARE ROOT FUNCTION
- (X) - NON-LINEAR FUNCTION OR CHARACTERIZER
- > - HI SELECT
- < - LO SELECT

(4) MORE THAN ONE FUNCTION LETTER MAY SUCCEED THE MEASURED VARIABLE WHEN THE DEVICE PERFORMS MORE THAN ONE FUNCTION. EXAMPLES:
- LSHL - LEVEL SWITCH HIGH LOW
- PIC - PRESSURE INDICATOR CONTROLLER

(5) CRT WILL DEPICT - COMPUTER DISPLAY TERMINAL.
CRH WILL DEPICT - COMPUTER KEYBOARD.

(6) SEE INSTRUMENT INDEX FOR LISTING OF INSTRUMENT TAG NUMBERS.

INSTRUMENT SPECIALTIES

- DIAPHRAGM SEAL
- TO XXXXX DRAWING NO. / FROM XXXXX DRAWING NO. — I — INTERLOCK

SENSORS-TEMPERATURE

- TE — TEMPERATURE ELEMENT AND WELL
- TW — TEMPERATURE WELL (TEST) WITH NO TEMPERATURE ELEMENT
- TE — TEMPERATURE ELEMENT WITH NO WELL

SENSORS-FLOW

- FE — FLOW NOZZLE OR VENTURI
- FE — ORIFICE PLATE WITH FLANGE OR CORNER TAPS
- FE — IN-LINE TURBINE OR PROPELLER TYPE OR VORTEX SHEDDING METER
- FE — IN-LINE FLOW INSTRUMENT MAGNETIC, DISPLACEMENT, MASS, LAMINAR, ETC.
- FE — DUCT MOUNTED PITOT TUBE
- FG — IN-LINE MOUNTED SIGHT FLOW GAUGE
- ANNUBAR (REGULAR)
- FE — ANNUBAR (FLANGED)
- STRAIGHTENING VANES
- FE — FLANGED-IN FLOW NOZZLE
- FO — DRILLED OR MULTI-STAGE ORIFICE
- FE — SONIC FLOWMETER "DOPPLER" OR "TRANSIT TIME"

VALVES/DAMPERS-OPERATORS

- M — ROTARY MOTOR
- S — SOLENOID (SOLENOID OPERATED VALVES WILL BE SHOWN IN THE DE-ENERGIZED POSITION)
- S, R — SOLENOID WITH MANUAL RESET
- M — ELECTRIC DAMPER OPERATOR
- PNEUMATIC CYLINDER (SINGLE-ACTING WITH OR WITHOUT POSITIONER)
- PO — PNEUMATIC PISTON DAMPER OPERATOR
- PNEUMATIC DIAPHRAGM (WITH OR WITHOUT POSITIONER)
- PNEUMATIC CYLINDER (DOUBLE-ACTING WITH OR WITHOUT POSITIONER)
- PNEUMATIC DIAPHRAGM (PRESSURE-BALANCED)
- EH — ELECTROHYDRAULIC DAMPER OPERATOR
- MANUAL (SHOWN WITH EXTENSION STEM THRU RADIATION SHIELD WALL; MANUAL OPERATOR MAY BE MOUNTED AT TOP, SIDE, OR BOTTOM OF ACTUATED DEVICE AS APPLICABLE)
- MANUAL OVERRIDE OF AUTOMATIC OPERATOR
- PV — PNEUMATIC VANE OPERATOR

SELF-ACTUATED DEVICES-PRESSURE

- PRESSURE REDUCING REGULATOR (SELF-CONTAINED)
- BACK PRESSURE REGULATOR (SELF-CONTAINED)
- PROCESS ACTUATED DIAPHRAGM OPERATOR VALVE

SPECIAL CONDITIONS

- MOV XXXX, H — ALL MOTOR OPERATED VALVES WILL BE TAGGED AS "MOV".
- PUSHBUTTON (PB)
- SPRING CHECK VALVE OR MIN. PRESSURE CHECK VALVE
- SHARED VIDEO DISPLAY AND CONTROL OR OPERATOR INTERFACE FOR SETPOINTS AND CONTROL.
- NOT ACCESSIBLE TO OPERATOR; SHARED BLIND CONTROLLER, COMPUTATIONAL, OR COMMUNICATION LINK.
- I/O: INPUT OR OUTPUT — FIELD MOUNTED PLC OR SLC — LADDER LOGIC ADDRESS

SENSORS-LEVEL

- BUBBLER
- SONIC
- CAPACITANCE
- RADAR
- FLOAT

ESFAS ACTUATED DEVICES (TYPICAL)

- ESF-C, M
- ESF-B, S
- ESF-A

ALL COMPONENTS SHOWN ON THE FLOW DIAGRAM WHICH RECEIVE A SIGNAL FROM THE ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS) SHALL BE INDICATED AS SHOWN ALSO IDENTIFYING WHICH TRAIN THE SIGNAL IS FROM A, B, OR C.

- PCC — PROCESS CONTROL CABINET
  THE PROCESS CONTROL CABINETS ARE SUPPLIED BY WESTINGHOUSE AND CONSIST OF THE REACTOR PROTECTION SYSTEM (RPS) CABINETS AND THE CONTROL GRADE INSTRUMENT CABINETS.
- MAC — MISCELLANEOUS ANALOG CABINET
- AMSAC — ATWS MITIGATION SYSTEM ACTUATION CIRCUITRY

LR BOUNDARY DRAWING NO.	REV.
LR-STP-9A310F00002	0

NO.	ISSUE DATE	REVISION	ORIG	CKR	RE	DV	SE
16		INCORP. DCN 0201292.	JSH				
15	7-8-02	INCORP. DCN 0201428.	JSH	ON FILE			
14	01-10-00	INCORP. DCN 9900322.	SIGNATURES ON FILE				
13	12-14-99	INCORP. DCN 9900298	SIGNATURES ON FILE				
0-12	6-23-02	ISSUED FOR CONSTRUCTION.	SIGNATURES ON FILE				

NO.	ISSUE DATE	REVISION	ORIG	CKR	RE	DV	SE

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PIPING & INSTRUMENTATION DIAGRAM STANDARD ABBREVIATIONS & SYMBOLS

PRIORITY	CADD FILE NO.	FSUG. NO.	STI. NO.	SCALE	DWG. NO.	SHT.	REV.
1	FJA035.161	D070928		NONE	9A310F00002	-	16

ESEED.DGN