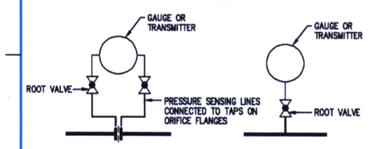
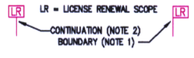
INSTRUMENTATION

- LOCALLY MOUNTED INSTRUMENT
- CONTROL ROOM MOUNTED INSTRUMENTS
- LOCAL PANEL OR RACK MOUNTED INSTRUMENTS
- HOT SHUTDOWN PANEL MOUNTED INSTRUMENTS
- XXXX ← LOCATION OF PANEL OR RACK
- SQUARE ROOT EXTRACTOR
- SUMMING ELEMENT

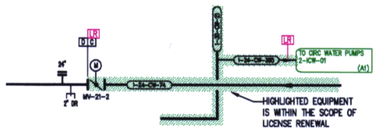
TYPICAL INSTRUMENTATION ARRANGEMENT



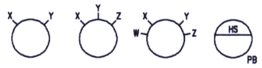
LICENSE RENEWAL CATEGORY



EXAMPLE

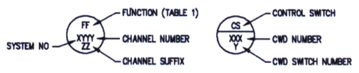


SWITCH POSITIONS & ABBREVIATIONS



A – AUTO
B – BOTH
BP – BYPASS
C – CLOSE
I – ISOLATE
LC – LOCKED CLOSED (KEY)
LO – LOCKED OPEN (KEY)
LR – LOCKED REMOTE
M – MANUAL
N – NORMAL
O – OPEN
OFF – OFF
ON – ON
OR – OVERRIDE
PB – PUSHBUTTON
RS – RESET

INSTRUMENT AND SWITCH IDENTIFICATION



MEASUREMENT CHANNELS ARE SUFFIXED AS FOLLOWS:

1 – SAFETY CHANNEL NUMBERS ARE SUFFIXED BY A, B, C, AND D ETC
2 – SIMILAR MEASUREMENT CHANNELS ARE SUFFIXED BY X, Y, Z, ETC
3 – "Y" AND "C" WHEN USED IN INSTRUMENTATION CHANNEL SUFFIXES DENOTE HOT AND COLD

TABLE I INSTRUMENT IDENTIFICATION LETTERS DENOTE CHANNEL FUNCTION, NOT SPECIFIC EQUIPMENT

INSTRUMENTATION IDENTIFICATION LETTERS		
	FIRST LETTER MEASURED OR INITIATING VARIABLE	SUCCEEDING LETTERS READ OUT OR FUNCTION
A	AIR	ALARM
C	CONDUCTIVITY (ELECTRICAL)	CONTROL
D	DENSITY	DIFFERENTIAL
E		ELEMENT
F	FLOW RATE	
G		GLASS
H	HAND (MANUALLY INITIATED)	
I	CURRENT (ELECTRICAL)	INDICATOR
J	POWER	
K	TIME OR TIME SCHEDULE	
L	LEVEL	LIGHT
M	MOISTURE OR HUMIDITY	
N	VIBRATION	
Y	ANALYSIS	CONVERTOR
P	PRESSURE	
Q	QUANTITY NUMBER	INTEGRATOR OR TOTALIZER
R	RADIATION	RECORDER
S	SPEED OR SELECTOR	SWITCH
T	TEMPERATURE	TRANSMITTER OR TRANSDUCER
V		VALVE
W	WEIGHT	WELL
X		TEST POINT OR MISC POWER SUPPLY
Z	POSITION	

BUILDING AND EQUIPMENT BOUNDARY LINES

- CONTAINMENT BOUNDARY
- CONTAINMENT PENETRATION (PIPE)
- BUILDING OUTLINE
- BLACK BOX

PIPE AND TUBING LINE TYPES

- MAIN PROCESS LINE
- SECONDARY PROCESS LINE
- INSTRUMENT LINE
- CAPILLARY TUBING
- PNEUMATIC SIGNAL/ACTUATION TUBING

ELECTRICAL LINE TYPES

- RADIATION SIGNAL
- HEAT TRACED PIPE OR TUBING (HEAT TRACING FUNCTIONAL)
- HEAT TRACED PIPE OR TUBING (HEAT TRACING ABANDONED)

MISCELLANEOUS LINE TYPES

- AIR SCREEN

REFERENCE TO CONNECTING DRAWINGS

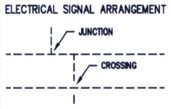
- TO OR FROM EQUIPMENT DRAWING NUMBER (COORD) — NORMAL CONTINUATION FLAG
- TO EQUIPMENT DRAWING NUMBER (COORD) — INSTRUMENT AIR CONTINUATION FLAG ON AIR SOURCE DRAWING
- FROM DWG NO (COORD) — INSTRUMENT AIR CONTINUATION FLAG AT POINT OF USE
- (X) — VENDOR CONNECTION NUMBER

PROCESS DATA POINTS

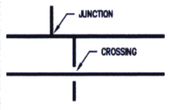
PROCESS FLOW DATA AT NUMBERED LOCATIONS ARE DEFINED IN THE SAFETY ANALYSIS REPORT

C — COMPUTER DATA INPUT

ELECTRICAL SIGNAL ARRANGEMENT



PIPE AND TUBING ARRANGEMENT



SAFETY CLASS AND SEISMIC CATEGORY

[X] A, B, C, D = SAFETY CLASS (QUALITY GROUP)

(REF: TABLE 3.2-1 OF FSAR)

ABBREVIATIONS

SIGNAL

CIS – CONTAINMENT ISOLATION
CSAS – CONTAINMENT SPRAY ACTUATION
MSIS – MAIN STEAM ISOLATION
RAS – RECIRCULATION ACTUATION
SIAS – SAFETY INJECTION ACTUATION

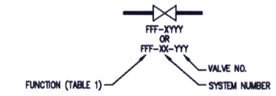
EQUIPMENT

BAMT – BORIC ACID MAKEUP TANK (CVCS)
BAT – BORIC ACID BATCHING TANK (CVCS)
CAT – CHEMICAL ADDITION TANK (CVCS)
EDT – EQUIPMENT DRAIN TANK (WMS)
FT – FLASH TANK
HT – HOLD-UP TANK (WMS)
QT – QUENCH TANK (RCS)
RAT – RESIN ADDITION TANK (WMS)
RDT – REACTOR DRAIN TANK (WMS)
RWT – REFUELING WATER TANK
SIT – SAFETY INJECTION TANK (SIS)
SRT – SPENT RESIN TANK (WMS)
VCT – VOLUME CONTROL TANK (CVCS)

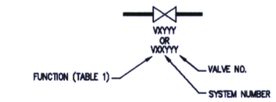
MISCELLANEOUS

AMP – AUTOMATIC CEA WITHDRAWL PROHIBIT
BHB – BACKUP HEATER BREAKERS
BHC – BACKUP HEATER CONTROL
CEDS – CONTROL ELEMENT DRIVE SYSTEM
DR – DRAIN
GA – GAS ANALYZER
HPRT – HIGH PRESSURIZER PRESSURE RELIEF VALVE TRIP
H2 – HYDROGEN
LPRT – LOW PRESSURIZER PRESSURE RELIEF VALVE TRIP
LS – LOCAL SAMPLE
LSS – LOCAL SAMPLE SINK
N2 – NITROGEN
N/S – NITROGEN SUPPLY
PHC – PROPORTIONAL HEATER CONTROL
PLS – PROGRAMED LEVEL SETPOINT (PRIS)
RPS – REACTOR PROTECTIVE SYSTEM
RR – REVERSE ROTATION
RRS – REACTOR REGULATING SYSTEM
SCR – PROPORTIONAL HEATER SCR CONTROLLERS
SG – STEAM GENERATOR
SIB – SAFETY INJECTION BLOCK
SIL – SAFETY INJECTION LOGIC
V – VENT TO ATMOSPHERE

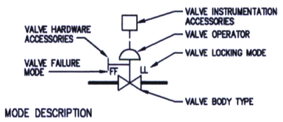
AIR & MOTOR OPERATED VALVES (EXCEPT NON-PROPORTIONAL REMOTELY HAND CONTROLLED VALVES)



MANUALLY OPERATED VALVES (INCLUDES NON-PROPORTIONAL, REMOTELY HAND CONTROLLED VALVES)



VALVE DESCRIPTION

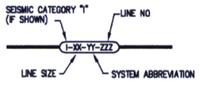


VALVE MODE DESCRIPTION

- NORMALLY OPEN
- NORMALLY CLOSED
- NEXT PORT TO CLOSE INDICATED BY A DOT IN THE PORT
- BUTTERFLY VALVE (NORMALLY CLOSED)

LO/C	LOCKED OPEN (AT CONTROL ROOM)
LC/C	LOCKED CLOSED (AT CONTROL ROOM)
LO	LOCKED OPEN (AT VALVE)
LC	LOCKED CLOSED (AT VALVE)
FO	FAIL OPEN
FC	FAIL CLOSED
FAI	FAIL AS IS

PIPING LINE DESIGNATION



VALVE BODY TYPES

- GATE
- GLOBE
- BALL
- NEEDLE
- BUTTERFLY
- DIAPHRAGM
- CHECK
- BALL CHECK
- STOP CHECK
- LIFT CHECK
- SPRING CHECK
- EXCESS FLOW CHECK
- FLOAT CHECK
- FLOAT VENT
- ANGLE
- SAFETY AND RELIEF
- 3-WAY
- 4-WAY
- FLAPPER
- PILOT VALVE

VALVE ACCESSORIES

- STEM LEAKOFF
- EXTENSION HANDWHEEL (ON DIAPHRAGM OPERATOR)
- BELLOWS SEAL
- HANDWHEEL (ON DIAPHRAGM OPERATOR)
- CAPPED STEM
- FI — FLOW INDICATING NEEDLE

VALVE OPERATORS

- DIAPHRAGM (PNEUMATIC)
- SELF ACTUATED PRESSURE REGULATING
- M — ELECTRIC MOTOR
- S — SOLENOID
- PISTON (PNEUMATIC)
- PISTON (HYDRAULIC)
- EXTENSION STEM
- POST INDICATOR

VALVE W/VALVE BOX AND TEE WRENCH OPERATOR

PIPE AND EQUIPMENT ACCESSORIES

- FE — ANNUBAR TYPE FLOW ELEMENT
- FE — RESTRICTION (SO) OR FLOW MEASURING (FE) ORIFICE
- LONG BORE ORIFICE
- FLANGED SPOOL PIECE FOR STARTUP SUCTION STRAINER
- S — INLINE STRAINER
- BASKET STRAINER
- JET PUMP
- SG — SIGHT FLOW GLASS
- F — FILTER
- S/S — SUCTION STABILIZER
- STRAP ON OR IMMERSION HEATER (ELECTRICAL)
- A — ACCUMULATOR
- FLANGED CONNECTION
- EXPANSION JOINT
- RUPTURE DISK RELIEF TO ATMOSPHERE
- QUICK CONNECT COUPLING FOR SECONDARY SYSTEMS
- PLUG OR CAPPED STUB
- BLIND FLANGE
- SPECTACLE BLIND NORMALLY OPEN (NO)
- SPRAY NOZZLE HEADER
- SPRAY NOZZLE
- LOOP SEAL
- STRAIGHTENING VANES

- FE — VENTURI TYPE FLOW ELEMENT
- FE — STRAP ON ACCOUSTICAL FLOW SENSOR
- TE — SURFACE TYPE GAS VENT (V)
- T — STEAM TRAP (T) OR TEMPERATURE ELEMENT
- S — "Y" TYPE STRAINER
- DUPLEX STRAINER
- EDUCTOR
- LG — SIGHT LEVEL GLASS
- FILTER REGULATOR
- PD — SPHERICAL TYPE PULSATION DAMPER
- C — CONDENSATE POT
- FLAME ARRESTOR
- DIAPHRAGM CONNECTION
- FLEXIBLE CONNECTION
- RUPTURE DISK RELIEF TO SYSTEM
- * QUICK CONNECT COUPLING FOR PRIMARY SYSTEMS
- WELDED CAP
- REDUCER
- SPECTACLE BLIND NORMALLY CLOSED (NC)
- THERMAL SLEEVE
- SPARGER
- OPEN DRAIN FUNNEL
- COOLING FINS

NOTE:
* QUICK DISCONNECTS ARE OPTIONAL ITEMS, WHICH MAY BE INSTALLED FOR CONVENIENCE, BUT ARE NOT REQUIRED FOR DESIGN FUNCTIONS.

EQUIPMENT

- CONDENSER
- ATMOSPHERIC TANK
- TANK
- PRESSURIZER VESSEL
- SINGLE FLOW TURBINE
- VANE AXIAL FAN
- STRAIGHT TUBE HEAT EXCHANGER
- U-TUBE HEAT EXCHANGER
- CENTRIFUGAL PUMP
- CANNED CENTRIFUGAL PUMP
- POSITIVE DISPLACEMENT PUMP
- VACUUM PUMP
- SUMP PUMP
- VERTICAL PUMP
- CENTRIFUGAL FAN OR COMPRESSOR
- COMPRESSOR

- MANWAY OR ACCESS HATCH
- BOTTOM LOADED FILTER
- TANK STRAINER
- UNDER DRAIN DISTRIBUTOR
- FIRE HYDRANT
- HS 15 XX — FIRE HOSE STATION (STATION NUMBER)
- STEAM GENERATOR
- M — MIXER

GENERAL NOTES:

1. DENOTES PRESSURE BOUNDARIES (PROCESS PIPING / TUBING / COMPONENTS) FOR SYSTEMS WITHIN THE SCOPE OF LICENSE RENEWAL.
2. DENOTES "IN PROCESS" PIPING / TUBING / COMPONENTS WITHIN THE SCOPE OF LICENSE RENEWAL.
3. QUALITY GROUP A, B OR C BOUNDARIES WITH UNTAGGED CLASS D COMPONENTS SHALL BE CONSIDERED AS A LICENSE RENEWAL BOUNDARY ALTHOUGH NOT IDENTIFIED WITH A LICENSE RENEWAL BOUNDARY FLAG.

D-002

FLORIDA POWER & LIGHT
ST. LUCIE NUCLEAR UNIT 2

GENERAL NOTES AND LEGEND

LICENSE RENEWAL BOUNDARY DRAWING

DRAWING NUMBER	REVISION
2-NOTES-01	0

2NOTES01.DWG