VALVE TYPES

- GATE (NORMALLY OPEN) — SEE NOTE 3
- GATE (NORMALLY CLOSED)
- GLOBE
- GLOBE,STOP CHECK
- CHECK
- EXCESS FLOW CHECK
- BUTTERFLY
- PLUG OR BALL
- NEEDLE
- SQUIB ACTIVATED SHEAR PLUG
- DE-ENERGIZED / NEXT PORT OF CLOSURE / ENERGIZED — THREE WAY SEE NOTE NO.1
- FOUR WAY
- ANGLE
- ANGLE,STOP CHECK
- GLAND LEAK OFF
- GLAND SEAL WATER
- SAUNDER'S TYPE
- SAFETY OR RELIEF
- DIAPHRAGM OPERATED CONTROL OPENS ON AIR FAILURE
- DIAPHRAGM OPERATED CONTROL CLOSES ON AIR FAILURE
- REVERSE CURRENT VALVE
- CHECK VALVE WITH ORIFICE
- POST INDICATOR VALVE
- DELUGE VALVE
- GLOBE "Y" PATTERN
- SPECIAL ANGLE (SIPHON)
- REDUCED PRESSURE ZONE BACKFLOW PREVENTOR

VALVE OPERATORS

- MO — MOTOR OPERATED
- HO — HYDRAULIC OPERATED PISTON
- AO — AIR OPERATED PISTON
- SOLENOID
- MANUAL REMOTE
- DIAPHRAGM
- FLOAT
- AI R PRESSURE REGULATOR
- MANUAL TRIP & RESET
- WITH MANUAL OVER RIDE
- PCV TCV FCV LCV — SELF CONTAINED CONTROL
- WITH POSITIONER
- QUICK OPENING

SAFETY CLASSIFICATION

TYPICAL SAFETY CLASS BOUNDARY DESIGNATION FLAGS FOR SAFETY CLASSES 1,2,3, SC(SAFETY CLASS ELECTRICAL), Q,OR N (NON-NUCLEAR SAFETY) OR Q (OTHER ITEM REQUIRING QA)

NOTES:
1. WHERE THE BOUNDARY BETWEEN CLASSES OCCURS AT A VALVE,THE FLAG SHALL ALWAYS MEAN THAT THE SAFETY CLASS BOUNDARY IS THE VALVE SEAT.WITH THE SEAT BEING AT THE HIGHER SAFETY CLASS
2. CAUTION - FOR FLUID SYSTEMS, SAFETY CLASS MARKERS INDICATE SAFETY CLASS PRESSURE BOUNDARY ONLY. THESE MARKERS DO NOT INDICATE SAFETY CLASS STRUCTURAL BOUNDRY, WHICH COULD EXTEND INTO AN NNS PRESSURE BOUNDARY, NOR DO THESE MARKERS INDICATE THE SAFETY CLASS OF INSTRUMENTATION. REFER TO THE "VERMONT YANKEE SAFETY CLASSIFICATION MANUAL" FOR ASSISTANCE.

VITAL FIRE TO NON-VITAL FIRE SYSTEM BOUNDARY MARKER. ALTHOUGH THE ENTIRE FIRE SYSTEM IS NNS, VITAL PORTIONS ARE TREATED AS QQA.

NOTE: THESE BOUNDARY MARKERS ARE INDEPENDENT OF THE SAFETY CLASS DESIGNATION FLAGS.

THIS IS AN ESAR DRAWING

SPECIALTIES

- FURNISHED WITH ASSOCIATE EQUIPMENT
- AIR EJECTOR
- INCREASER,REDUCER
- THREADED CAP
- QUICK DISCONNECT
- WELD CAP
- SCREWED PIPE PLUG
- HOSE CONNECTION
- BLIND FLANGE
- "Y" TYPE STRAINER
- AUTO DRAIN. TRAP
- TRAP
- FLEXIBLE CONNECTION
- CRW — OPEN DRAIN FUNNEL DRAIN SYSTEM
- FILTER
- TEMPORARY PLATE STRAINER
- VACUUM BREAKER
- RUPTURE DISC
- EXPANSION JOINT
- BASKET STRAINER (DUPLEX)
- BASKET STRAINER (SIMPLEX)
- FS — IN-LINE FLOW SWITCH
- SPECTACLE FLANGE
- METERING ORIFICE PLATE
- FE — FLOW NOZZLE
- FE — VORTEX FLOW METER
- FE — FORWARD REVERSE FLOW ELEMENT
- FE — INLINE TANGENTIAL FLOW METER
- FG — SIGHT FLOW GLASS
- SC — SAMPLE COOLER
- FI — IN-LINE FLOW INDICATOR ROTOMETER
- RO — RESTRICTING ORIFICE
- IF — INSULATING FLANGE
- SX — SAMPLE TEST POINT
- FLOW METER(POSITIVE DISPLACEMENT)
- T — TRANSMITTER
- CONTAINMENT PENETRATION
- MANOMETER
- FIRE HYDRANT
- SPOOL PIECE FOR CONE STRAINER
- EDUCTOR

SPECIAL INSTRUMENT SYMBOLS

- LOCAL INSTRUMENT
- 4E — PANEL OR RACK NO. REMOTE INSTRUMENT
- 4F — PANEL OR RACK NO. MAIN CONTROL ROOM MAIN CONTROL ROOM INSTRUMENT
- E/P — CONVERTER (VOLTAGE/PNEUMATIC)
- R "X"P — MULTIPOINT RECORDER
- I/P — CONVERTER (CURRENT/PNEUMATIC)
- LOGIC
- RAM — RADIATION MONITOR
- REMOTE DIAPHRAGM SEAL
- NONINTRUSIVE INSTRUMENT EXTERNAL TO PROCESS

ELECTRICAL

- S — ELECTRONIC TRIP UNIT
- C — COMPUTER INPUT (ERFIS)
- CI — COMPUTER INPUT (HP DAS)
- NOT FULLY OPEN / ALARM USED WHEN SERVICE IS NOT DEFINED (USE "L" FOR LOW AND "H" FOR HIGH) / NOT FULLY CLOSED
- ALARM HIGH
- ALARM LOW — USED WHEN SERVICE IS DEFINED
- ALARM OPEN
- OPEN / CLOSED — LIGHT
- SS — SELECTOR SWITCH
- LD — LEAK DETECTOR

PIPING

- PROCESS LINE MAIN
- PROCESS LINE AUXILIARY AND INSTRUMENT SENSING LINE
- INSTRUMENT AIR LINE
- INSTRUMENT ELECTRICAL LEADS
- INSTRUMENT CAPILLARY TUBING
- 20" MS - 1 — PIPING DESIGNATION NO. / PIPING SYSTEM DESIGNATION / PIPE SIZE
- FOR CONT.SEE DWG.NO.

INSTRUMENT DESIGNATIONS

MEASURED VARIABLE (FIRST LETTER)		CONTROLLING (SECOND AND THIRD LETTER): RECORDING	INDICATING	NON-INDICATING	CONTROL VALVE	TOTALIZER	FUNCTION GENERATOR	MEASURING (SECOND AND THIRD LETTER): RECORDING	INDICATING	OBSERVATION GLASS	PRIMARY ELEMENT	TEST POINT	TRANSMITTER (OR PREAMP)	INTEGRATOR	AMPLIFIER	SAMPLER	INDICATING SWITCH	NON-INDICATING SWITCH	ALARMS	ISOLATOR	MONITOR
		-RC	-IC	-C	-CV	-Σ	-f	-R	-I	-G	-E	-X	-T	-Q	Am	Sm	IS	-S	-A	-B	-
AIR	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ASm	-	-	-	-	-
CONDUCTIVITY	C	CRC	CIC	-	CCV	-	-	CR	CI	-	CE	CX	-	-	-	CSm	CIS	CS	CA	-	-
DENSITY	D	DRC	DIC	DC	DCV	-	-	DR	DI	-	-	DX	-	-	-	-	DIS	DS	DA	-	-
DIFF.PRESS.	dP	dPRC	dPIC	dPC	dPCV	-	-	dPR	dPI	-	-	-	dPT	-	-	-	dPIS	dPS	dPA	-	-
FLOW	F	FRC	FIC	FC	FCV	F Σ	Ff	FR	FI	FG	FE	FX	FT	FQ	-	-	FIS	FS	FA	FB	-
FREQUENCY	FR	-	-	-	-	-	-	-	-	-	-	-	FRT	-	-	-	-	-	-	FRB	-
MOISTURE	M	MRC	MIC	-	-	-	-	MR	MI	-	ME	-	-	-	-	-	-	-	-	-	-
NEUTRON FLUX	N	NRC	NIC	NC	-	-	-	NR	NI	-	NE	NX	NT	NQ	NAm	-	-	-	NA	-	-
HYDROGEN ION CONC.	pH	pHRC	pHIC	pHC	pHCV	-	-	pHR	pHI	-	pHE	pHX	-	-	pHAm	pHSm	-	-	-	-	-
LEVEL	L	LRC	LIC	LC	LCV	-	-	LR	LI	LG	-	-	LT	-	-	-	LIS	LS	LA	LB	-
OXYGEN	O_2	-	-	-	-	-	-	O_2R	O_2I	-	O_2E	-	-	-	-	-	-	-	-	-	-
PRESSURE	P	PRC	PIC	PC	PCV	-	-	PR	PI	-	-	PX	PT	-	-	-	PIS	PS	PA	PB	-
POSITION	Po	-	-	-	-	-	-	PoR	PoI	-	-	-	PoT	-	-	-	-	PoS	PoA	-	-
RADIATION	R	-	-	-	-	-	-	RR	RI	-	RE	RX	-	-	RAm	RSm	-	RS	RA	RB	-
SPEED	S	SRC	SIC	SC	-	-	-	SR	SI	-	SE	-	-	-	-	-	-	-	-	-	-
TEMPERATURE	T	TRC	TIC	TC	TCV	-	-	TR	TI	-	TE	TX	TT	-	-	-	TIS	TS	TA	TB	-
TIME	t	-	-	tC	-	-	-	-	tI	-	-	-	-	-	-	-	tIS	tS	-	-	-
VIBRATION	Vb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	VbS	VbA	-	-
VOLTAGE	V	-	-	-	-	-	-	-	-	-	-	-	VT	-	-	-	-	-	-	VB	-
WATTAGE	W	-	-	-	-	-	-	-	-	-	-	-	WT	-	-	-	-	-	-	WB	-
WEIGHT FACTOR	Wf	WfRC	WfIC	-	WfV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ACOUSTIC	Z	-	-	-	-	-	-	-	ZI	-	ZE	-	ZT	-	-	-	-	-	-	-	ZM

MISCELLANEOUS ABBREVIATIONS

A.W. ACID WASTE (CORROSIVE CAUSTIC)
N.W. NORMAL WASTE (CONVENTIONAL)
F.A.I. FAIL AS IS
F.C. INDICATES FAILS OR CLOSES ON AIR OR ELECTRICAL FAILURE
F.O. INDICATES OPENS ON AIR OR ELECTRICAL FAILURE
L.C. LOCKED CLOSED
H.S. HAND SWITCH
A/S AIR SUPPLY
SQ. RT. SQUARE ROOT EXTRACTOR
E/S SPECIAL ELECTRIC POWER SUPPLY
R.P.S. REACTOR PROTECTION SYSTEM
R.M. REMOTE MANUAL
L.O. LOCKED OPEN
N.C. NORMALLY CLOSED
N.O. NORMALLY OPEN
T.D.S. TIME DELAY SWITCH
R.M.S. REMOTE MANUAL SWITCH
R.M.C. REMOTE MANUAL CONTROL
PTID COMPUTER POINT IDENTIFICATION NUMBER
SM SEISMIC MONITOR
AR ANNUNCIATOR REFLASH
SMB SEISMIC MONITOR INTERFACE BOX

PIPING SYSTEM DESIGNATIONS

DESIGNATION	DESCRIPTION
AC	ATMOSPHERIC CONTROL
AE	AIR EVACUATION
AS	AUXILIARY STEAM
C	CONDENSATE
CWM	CONDENSATE WTR.MAKE-UP & SURGE
CF	CHEMICAL FEED
CRD	CONTROL ROD DRIVE
CS	CORE SPRAY
CST	CONDENSATE AND DEMINERALIZED WATER STORAGE AND TRANSFER
CUW	CLEAN-UP WATER
CW	CIRCULATING WATER
CWP	CONDENSER WATER BOX PRIMING
CA	CHEMICAL ADDITION
CRW	CLEAN RADWASTE
CAR	CROSSOVER PIPING (M.S.)
DC	DRYWELL COOLING
DW	DEMINERALIZED WATER
DO	DIESEL OIL
DOW	DOMESTIC WATER
DRW	DIRTY RADWASTE
E	EVAPORATOR
ES	EXTRACTION STEAM
ESD	EXTRACTION STM.DRAIN
FDW	FEEDWATER
FO	FUEL OIL
FW	FIRE WATER
FPC	FUEL POOL COOLING AND FILTERING
GCD	GENERATOR CO_2
GH	GENERATOR HYDROGEN
HD	HEATER DRAIN
HS	HEATING STEAM
HSCR	HEATING STEAM CONDENSATE RETURN
HV	HEATER VENT
HPCI	HIGH PRESSURE COOLANT INJECTION
HCU	HYDRAULIC CONTROL UNIT
IA	INSTRUMENT AIR
LO	TURBINE LUBE OIL
MD	MISCELLANEOUS DRAINS
MSD	MAIN STEAM DRAIN
MS	MAIN STEAM
MUD	MAKE-UP DEMINERALIZER
MV	MISCELLANEOUS VENTS
OG	OFF-GAS
PD	PLUMBING AND DRAINAGE
PLR	PRIMARY LOOP RECIRCULATION
PSA	PROCESS SAMPLING
PSE	PROCESSING SENSING
PW	POTABLE WATER
RVF	REACTOR VESSEL FLANGE SEAL LEAKOFF
RCW	REACTOR BUILDING COOLING WATER
RDB	REACTOR DRYWELL BELLOWS
RT	RESIN TRANSFER
RV	REACTOR VENT
RVH	REACTOR VESSEL HEAD COOLING
RW	RADIOACTIVE WASTE
RHR	RESIDUAL HEAT REMOVAL
RCIC	REACTOR CORE ISOLATION COOLING
SA	STATION AIR
SB	STEAM BYPASS
SC	SECONDARY COOLING
SCW	SCREEN WASH
SGT	STANDBY GAS TREATMENT
SHC	SHUTDOWN COOLING
SLC	STANDBY LIQUID CONTROL
SPE	STEAM PACKING EXHAUSTER
SRV	SAFETY AND RELIEF VALVE PIPING
SW	SERVICE WATER
SD	SCRAM DISCHARGE
ST	STEAM TRAP
TCW	TURBINE BUILDING COOLING WATER
VE	VENTILATION EXHAUST (TO STACK)

REFERENCES:

MAIN, EXTRACTION & AUXILIARY STEAM	G-191156
CONDENSATE FEEDWATER & AIR EVACUATION	G-191157 SH. 1
OXYGEN INJECTION-FLOW DIAGRAM	G-191157 SH. 2
HEATER DRAIN & VENT	G-191158
SERVICE WATER SYSTEM	G-191159 SH. 1-5
FLOW DIAGRAM - AOG CCW	G-191159 SH. 6
SERVICE & INSTRUMENT AIR	G-191160 SH. 1-7
MAKE-UP WATER TREATMENT	G-191161
MISCELLANEOUS SYSTEMS	G-191162 SH. 1-3
FIRE PROTECTION INNER LOOP	G-191163 SH. 1 & 2
SAMPLE SYSTEM SHEET 1	G-191164
SAMPLE SYSTEM SHEET 2	G-191165
CIRCULATING WATER & MISC. SYSTEMS	G-191166
NUCLEAR BOILER	G-191167
CORE SPRAY	G-191168
HPCI	G-191169 SH. 1 & 2
CONTROL ROD DRIVE HYDRAULIC	G-191170
STANDBY LIQUID CONTROL	G-191171
RESIDUAL HEAT REMOVAL	G-191172
FUEL POOL COOLING & CLEANUP	G-191173
REACTOR CORE ISOLATION COOLING	G-191174 SH. 1 & 2
PRIMARY CONTAINMENT-ATMOSPHERIC CONTROL	G-191175 SH. 1 & 2
CONDENSATE & DEMIN WATER TRANSFER	G-191176 SH. 1 & 2
RADWASTE	G-191177 SH. 1-4
REACTOR WATER CLEANUP	G-191178 SH. 1 & 2
HVAC/FLOW TURBINE, SERVICE & CONTROL RM	G-191237
HVAC/FLOW REACTOR BLDG.	G-191238
NUCLEAR BOILER VESSEL INSTRUMENTATION	G-191267
CONDENSATE DEMINERALIZER SYSTEM	G-191274
POTABLE WATER FLOW DIAGRAM	G-191280
RPT/ANLG TRIP SYSTEM MOD 24VDC	G-191297
MAIN ONE LINE WIRING DIAGRAM	G-191298
4KV AUXILIARY ONE LINE WIRING DIAGRAM	G-191299
480V AUX. ONE LINE WIRING DIAGRAM SH. 1	G-191303
480V AUX. ONE LINE WIRING DIAGRAM SH. 2	G-191304
480V AUX. ONE LINE WIRING DIAGRAM SH. 5	G-191341
480V AUX. ONE LINE WIRING DIAGRAM SH. 3	G-191370
480V ESS AC AUX. ONE LINE DIAGRAM	G-191371 & G-191372 SH. 1
125V DC & VITAL AC ONE LINE WIRING DIAGRAM	G-191372 SH. 2 & 3
480V AUX. ONE LINE WIRING DIAGRAM SH. 4	G-191398
480V & 125V DC AUX. ONE LINE WIRING DIAGRAM	G-191409
CIRCULATING WATER SYSTEM	G-191451
A.O.G. FLOW DIAGRAM	VY-E-75-001
C.A.D. FLOW DIAGRAM	VY-E-75-002
480V AUX. ONE LINE WIRING DIAGRAM	VY-E-40-001

NOTES:

1. ALL SOLENOID VALVES SHOWN IN DE-ENERGIZED POSITION. "NE" - DENOTES SOLENOID IS NORMALLY ENERGIZED DURING PLANT OPERATION. "ND" - DENOTES NORMALLY DE-ENERGIZED.
2. RB IS ALSO THE ABBREVIATION FOR DIGITAL ISOLATORS CONNECTED INTO CONTACT (RELAY) CIRCUITRY.
3. FOR ½" AND SMALLER INSTRUMENT ISOLATION OR DRAIN VALVES, THE GATE VALVE SYMBOL IS CONSIDERED GENERIC - THE VALVE MAY BE GATE, GLOBE OR NEEDLE TYPE.

REV	DESCRIPTION	BY	CHKD.	APPD.
18	REVISED PER CU ER 2002-1514_01	3-19-03 WD	3-11-03 JK	3-11-03 JGR
19	REVISED PER MM 2002-001 JO 2002-0088	4-23-03 SCB	4-23-03 RB	5-22-03 BJ

YANKEE ATOMIC ELECTRIC COMPANY
580 MAIN STREET BOLTON,MA.
NUCLEAR SERVICES DIVISION
VERMONT YANKEE NUCLEAR POWER STATION
VERNON, VERMONT

DRAWING TITLE: PIPING AND INSTRUMENT SYMBOLS

JOB NO.

DRAWING NO. G-191155 SHT.1 OF 1

$TIMES $DATES $FILES

NO.	DATE	DESCRIPTION	BY	ENG	CHK	APP
0	3-29-05					

REVISIONS

LRA-G-191155-0

CAD FILE: LRA-G-191155_19.DGN

RASTER FILE: N/A

D-05