

REVISIONS

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DRAWN BY: JLB
DATE: 12-14-07
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REVIEWED BY: SRM
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ADDED SEISMIC ENDPOINT SYMBOL TO LEGEND.
DRAWN BY: JLB
DATE:
PREPARED BY:
REVIEWED BY:
DATE:

INSTRUMENTATION

INSTRUMENT LINE SYMBOLS

	INSTRUMENT PRIMARY PIPING
	INSTRUMENT PNEUMATIC CONTROL LINES
	INSTRUMENT ELECTRICAL LINES
	INSTRUMENT CAPILLARY LINES
	INSTRUMENT HYDRAULIC LINES

INSTRUMENT GRAPHIC SYMBOLS

	TRANSMITTER		WESTINGHOUSE FURNISHED TRANSMITTER
	PANEL MOUNTED		1 LAMP
	2 LAMPS		3 LAMPS
	4 LAMPS		PANEL MTD ELEC. SWITCH WITH LAMPS
	LOCAL MOUNTED		LOCAL PANEL / RACK
	LOCAL MOUNTED (DUAL OUTPUT)		INDICATOR LAMP
	1-LAMP		2-LAMP
	CONTROL DAMPER		CONTROL VALVE
	MOTOR OPERATED DAMPER		MOTOR OPERATED DAMPER WITH PANEL MTD INDICATING LIGHTS
	SOLENOID VALVE		CONTROL DRIVE OR TEMPERATURE ELEMENT
	DARK BAND INDICATES INPUT TO COMPUTER		

INSTRUMENT CODES

A - ALARM	LM - LIQUID MONITOR
C - CONTROLLER	LS - LIMIT SWITCH
D - DRAFT	MD - MOTOR OPER DAMPER
F - FLOW	MS - HUMIDITY SWITCH
H - HYDROGEN	MV - MOTOR ACTUATED VALVE
I - INDICATOR	OT - ORSAT TEST
L - LEVEL	PB - PUSHBUTTON STATION
M - MANOMETER	PH - HYDROGEN-HYDROXYL CONC
O - OXYGEN	PM - POSITION MOVEMENT
P - PRESSURE	PQ - POWER SUPPLIES
R - RECORDER	PS - PRESSURE SWITCH
S - SMOKE	PT - PRESSURE TEST
T - TEMPERATURE	RE - RADIATION ELEMENT
V - VACUUM	RM - RADIATION MONITOR
AM - AREA MONITOR	SD - SMOKE DETECTOR
AS - AIR SUPPLY	SP - SPEED
CB - COMBUSTIBLES	SV - SOLENOID VALVE
CC - CONDUCTIVITY CELL	TD - TEMPERATURE DIFFERENTIAL
CD - CONTROL DAMPER	TE - TEMPERATURE ELEMENT (T/C RTD)
CS - CONTROL STATION	TM - TELEVISION MONITOR
CV - CONTROL VALVE	TS - TEMPERATURE SWITCH
CY - CONDUCTIVITY	TT - TEMPERATURE TEST
DP - DIFFERENTIAL PRESSURE	TU - TRIP UNIT
ES - ELECTRICAL SWITCH	TV - TRANSFER VALVE
FE - FLOW ELEMENT	DOA - DISSOLVED OXYGEN ANALYZER
FM - FISSION PRODUCT MNTR	HUM - HUMIDITY
FS - FLOW SWITCH	SCV - SIGNAL CONVERTER
FT - FLOW TEST	SER - SEQUENCE OF EVENT RECORDER
IL - INDICATING LAMP	VBD - VIBRATION DETECTOR
LD - LEAK DETECTOR	

VALVES

SYMBOL	DESCRIPTION
	3-WAY VALVE
	4-WAY VALVE
	AIR CYLINDER ACTUATOR
	ANGLE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CAPPED STEM
	CHECK VALVE
	CHECK VALVE (SPRING LOADED)
	CONTROL VALVE (AIR DIAPHRAGM OPERATED)
	DIAPHRAGM VALVE
	EXTENSION STEM OPERATOR
	FLOAT CHECK VALVE
	FOOT VALVE
	GATE VALVE
	GATE VALVE (DOUBLE DISC)
	GLOBE VALVE
	HAND WHEEL OPERATOR
	INSTRUMENT ACTUATED OPERATOR WITH VALVE POSITIONER
	MOTOR OPERATOR
	NEEDLE VALVE
	PLUG VALVE
	QUICK HAND ACTUATOR
	REMOTE MANUAL ACTUATOR
	SAFETY AND RELIEF VALVE
	SELF CONTAINED REGULATOR
	SHUT-OFF VALVE
	SOLENOID OPERATOR
	STEM LEAKOFF (ROUTED)
	STOP CHECK VALVE
	THROTTLE VALVE
	VALVE INSTALLED WITH FLOW OVER THE SEAT
	BLACKED-IN VALVES ARE NORMALLY CLOSED

PIPING SPECIALTIES

SYMBOL	DESCRIPTION
	ANNUBAR
	BLIND FLANGE OR TEMPORARY CONNECTION
	CAP -THREADED
	CAP -WELDED
	DIAPHRAGM SEAL
	DRAIN FUNNEL
	EDUCTOR
	EXPANSION JOINT
	FILTER
	FLANGE CONNECTION (PIPING OR EQUIPMENT)
	FLEX CONNECTION
	FLOW NOZZLE
	FLOW ORIFICE
	HOSE OR TUBING
	HOSE CONNECTION
	JOHNSON SCREEN
	LOOP SEAL (TRAP)
	QUICK DISCONNECT
	REDUCER
	RUPTURE DISC
	SIGHT GLASS
	SPARGER (INSIDE VESSEL)
	SPECTACLE FLANGE
	SPRAY NOZZLES (INSIDE VESSEL)
	STEAM TRAP
	STRAINER
	STRAINER (Y-TYPE)
	THERMAL SLEEVE
	VACUUM BREAKER
	VENT TO ATMOSPHERE
	VESSEL MANWAY

EQUIPMENT

SYMBOL	DESCRIPTION
	ACCUMULATOR
	BLENDER
	DAMPER - CONTROL
	DAMPER - MOTOR
	FAN, BLOWER OR COMPRESSOR
	HEATER (STEAM OR ELECTRICAL)
	HEAT EXCHANGER (ANY TYPE)
	MIXER (AIR OR ELECTRICAL)
	PROPELLER FAN
	PUMP -CENTRIFUGAL
	PUMP -POSITIVE DISPLACEMENT
	PUMP -VERTICAL SHAFT
	STEAM GENERATOR
	TANK -ATMOSPHERIC
	TANK -OR VESSEL PRESSURIZED

FIRE PROTECTION

SYMBOL	DESCRIPTION
	AIR RELEASE VALVE
	ANGLE DRAIN VALVE
	BUTTERFLY VALVE WITH POST INDICATOR
	CHECK VALVE -ALARM
	DELUGE VALVE
	DRAIN TO SUMP
	FIRE DETECTION PANEL
	FIRE HOSE RACK WITH FOG NOZZLE
	HYDRANT & HOSE HOUSE
	O.S. & Y. GATE VALVE
	SERVICE WTR HOSE STATION WITH VALVE & COUPLING
	SPRINKLER -PENDANT
	SPRINKLER -UPRIGHT
	WATER FLOW ALARM (PADDLE TYPE)
	WATER FOG NOZZLE

MISCELLANEOUS

SYMBOL	DESCRIPTION
	WALL

LINE CODING

P&ID'S & PROCESS FLOW DIAGRAMS

10-2MS-18
PIPE SIZE UNIT 2 | SYSTEM | LINE NUMBER | CATEGORY I VENTILATION ZONE

10" | (II) | (III)

DENOTES LIMITS OF O.A. TYPES

PRIMARY FLOW LINES (2 1/2" & LARGER)
-OUT OF SYSTEM DASHED

SECONDARY FLOW LINES (UNDER 2 1/2")
-OUT OF SYSTEM DASHED

INSIDE | OUTSIDE | SHIELD WALL PENETRATION

SS | CS | MATERIAL TRANSITION PIECE

ELECTRICAL HEAT TRACING

2 2 | QUALITY ASSURANCE TYPE (PIPE OR EQUIP. QA TYPE 2)

2 1 | QUALITY ASSURANCE TYPE CHANGE (VALVE & DOWN-STREAM PIPE QA TYPE 1)

SEISMIC ANCHOR

SEISMIC ENDPOINT

LR - LEGEND

	IN SCOPE FOR LR PER 10 CFR 54.4(a)(1)
	IN SCOPE FOR LR PER 10 CFR 54.4(a)(3)
	IN SCOPE FOR LR PER 10 CFR 54.4(a)(2)
	OUT OF SCOPE
	DENOTES SYSTEM BOUNDARY BREAK

LICENSE RENEWAL NOTE:

VALVE ACTUATORS (I.E. MOTORS, ETC.) WILL BE HIGHLIGHTED THE SAME AS THE VALVE BODY FOR CONVENIENCE. RE: THE DRAWINGS USE A SINGLE ELEMENT FOR THE VALVE AND MOTOR, MAKING IT IMPRACTICAL TO HIGHLIGHT USING TWO DIFFERENT COLORS. IN ACCORDANCE WITH THE E&I SCOPING AND SCREENING METHODOLOGY, VALVE ACTUATORS ARE CONSIDERED WITHIN THE SCOPE OF LICENSE RENEWAL AND THEN SCREENED OUT AS ACTIVE BY THE ELECTRICAL GROUP.

ABBREVIATIONS

DA	DELUGE SYSTEM AUTOMATIC
DM	DELUGE SYSTEM MANUAL
FS	FLOW SWITCH (PADDLE TYPE)
HH	HYDRANT & HOSE HOUSE
L.C.	VALVE SEALED CLOSED (WIRE SEAL)
L.O.	VALVE SEALED OPEN (WIRE SEAL)
PA	PRE-ACTION AUTOMATIC
SWP	STAIRWAY WET PIPE SYSTEM
WPS	WET PIPE SYSTEM

This map / document is a tool to assist employees in the performance of their jobs. Your personal safety is provided for by using safety practices, procedures and equipment as described in safety training programs, manuals and SOPs.

DWN	DATE	SIGNIFICANT NO.	8630	1	2	3	4	5	6
CHECKED		GROUP							
PROJECT NO.		FLOW DIAGRAM INSTRUMENT & VALVE LEGEND							
APP'D & CERT.		NORTHERN STATES POWER COMPANY Xcel Energy PRAIRIE ISLAND NUCLEAR GENERATING PLANT RED WING, MINNESOTA							
FILED		SCALE	NONE	REV	1	LR-39214			

LR-39214.DGN [NSP GENERATION CAD]

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