LR-39214

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
- 21001 ← P.S.&E. TAG NO.
- 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)
- 1-LAMP 2-LAMP — INDICATOR LAMP
- CONTROL DAMPER / CONTROL VALVE / MOTOR OPERATED DAMPER / MOTOR OPERATED VALVE — 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 CONCN
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
A/S – 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	S/CV – 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 (ARROWS SHOW FAILURE MODE)
	4-WAY VALVE (ARROWS SHOW FAILURE MODE)
	AIR CYLINDER ACTUATOR
	ANGLE VALVE
	BALL VALVE
	BELLOWS SEAL
	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
M	MOTOR OPERATOR
	NEEDLE VALVE
	PLUG VALVE
	QUICK HAND ACTUATOR
R	REMOTE MANUAL ACTUATOR
	SAFETY AND RELIEF VALVE
	SELF CONTAINED REGULATOR
	SHUT-OFF VALVE
S	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
F	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
SG	SIGHT GLASS
	SPARGER (INSIDE VESSEL)
	SPECTACLE FLANGE
	SPRAY NOZZLES (INSIDE VESSEL)
T	STEAM TRAP
S	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)
M	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
A	CHECK VALVE -ALARM
	DELUGE VALVE
	DRAIN TO SUMP
A FDP	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 Q.A. TYPES

- PRIMARY FLOW LINES (2½" & LARGER) -OUT OF SYSTEM DASHED
- SECONDARY FLOW LINES (UNDER 2½") -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

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

LR - LEGEND

- IN SCOPE FOR LR PER 10 CFR 54.4(a)(1) 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&IC SCOPING AND SCREENING METHODOLOGY, VALVE ACTUATORS ARE CONSIDERED WITHIN THE SCOPE OF LICENSE RENEWAL AND THEN SCREENED OUT AS ACTIVE BY THE ELECTRICAL GROUP.

REVISIONS

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DRAWN BY: JLB
DATE: 12-14-07
PREPARED BY: WJI
DATE: 12-14-07
REVIEWED BY: SRM
DATE: 12-17-07

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ADDED SEISMIC ENDPOINT SYMBOL TO LEDGEND.
DRAWN BY: JLB
DATE:
PREPARED BY:
DATE:
REVIEWED BY:
DATE:

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 SPAR's.

SIGNIFICANT NO.	8630							
GROUP	1	2	3	4	5	CL	6	

DWN | DATE
CHECKED
PROJECT NO.
APP'D & CERT.
FILMED

FLOW DIAGRAM
INSTRUMENT & VALVE LEGEND

NORTHERN STATES POWER COMPANY
Xcel Energy
PRAIRIE ISLAND NUCLEAR GENERATING PLANT
RED WING, MINNESOTA

SCALE NONE | REV 1
LR-39214

LR-39214.DGN NSP GENERATION CAD

$$$$SYSTIME$$$$ $$$$USERNAME$$$$ $$$$DATE$$$$ $$$$SIGNAL$$$$

D-003