NX-7834-2-2

REVISIONS

B — AS BUILT REVISED TO REFLECT THE ELIMINATION OF M.S. HIGH RAD SCRAM ISOLATION MOD PER CRR/DRR: MO-93-62
DWN: RHH 4-22-93
CHK: PEB 8-26-93
MOD: 920315
FILMED: 9-10-93

C — AS BUILT REVISED TO REFLECT THE RPS H.F.A. RELAY CONTACT CHANGES TO THE PROCESS COMPUTER MODIFICATION PER CRR/DRR: MO-94-71
DWN: RHH 6-2-94
CHK: RAO 6-3-94
MOD: 920455
FILMED: 6-15-94

A1 TRIP CHANNELS (AUTO)

BUS A E-3 SH. 1

A1 TRIP LOGIC (AUTO)

A3 TRIP LOGIC (MANUAL)

MAIN STEAM LINE ISOLATION VALVE CLOSURE — LIM SWITCH — ON VALVES 2-80A, 2-80A, 2-80B, 2-86B — NOTE 4 — RPS078 RPS079 RPS080 RPS081 — NOTE 5

DISCHARGE VOLUME HIGH WATER LEVEL — LS-7428A LS-7428E — LOCAL — RPS053 RPS054 RPS055 RPS056 RPS074 RPS075 RPS076 RPS077

MAIN CONDENSER LOW VACUUM — PSH 5-11A — LOCAL — SH. 3 F-12 — RPS005 RPS006 RPS007 RPS008

TEST SWITCH (OPEN TO TEST) — RMS — CR

PERMISSIVE WHEN DISCH. VOL. HIGH LEVEL TRIP BYPASSED — RMS — CR

PERMISSIVE WHEN ENERGIZED — AUX. DEV. — CR

MODE SWITCH PERMISSIVE IN "REFUEL" AND "SHUTDOWN" — RMS — CR

TURBINE STOP VALVE CLOSURE — BY AE — LOCAL — SH. 3 B-1, SH. 3 B-2 — RPS005 RPS006 RPS007 RPS008

TURBINE CONTROL VALVE FAST CLOSURE — BY AE — LOCAL — SH. 3 B-11 — NOTE 6 — RPS031 RPS032 RPS033 RPS034

PERMISSIVE WHEN ENERGIZED — AUX. DEV. — CR

MODE SWITCH PERMISSIVE IN "REFUEL", "START-UP" AND "SHUTDOWN" — RMS — CR

REACTOR VESSEL LOW LEVEL — TRIP SYS A-1 OR V. TRIP SYS A2 LIS 2-3-58A — LIS 2-3-57A — LOCAL — SH. 3 B-13 — RPS030 RPS035 RPS037 RPS038

PERMISSIVE WHEN ENERGIZED — AUX. DEV. — CR

PERMISSIVE WHEN REACTOR PRESSURE IS BELOW 600 PSIG. — PS 2-3-51A — LOCAL — REF 5

SH. 3 E-1 — RPS017 RPS018 RPS019 RPS020

PERMISSIVE WHEN ENERGIZED — AUX DEV — CR

PERMISSIVE IF TURBINE FIRST STAGE PRESS ≤ 45 % RATED — PSH 5-14A — LOCAL

SH. 3 E-10

NEUTRON MONITORING SYSTEM — REF. 12

PERMISSIVE WHEN ENERGIZED — AUX DEV — CR

PRIMARY CONTAINMENT HIGH PRESSURE — PSH 5-12A — LOCAL

PERMISSIVE WHEN ENERGIZED — AUX DEV — CR

REACTOR VESSEL HIGH PRESS — PS 2-3-55A — LOCAL — SH 3. F-1 — RPS009 RPS010 RPS011 RPS012 — SH 3. D-1 — RPS013 RPS014 RPS015 RPS016

PERMISSIVE WHEN ENERGIZED — AUX DEV — CR

PERMISSIVE WHEN ENERGIZED — AUX DEV — CR

PERMISSIVE WHEN ENERGIZED — AUX DEV — CR

A2 TRIP CHANNELS (AUTO) (SAME AS A1 TRIP CHANNELS)

A2 TRIP LOGIC (AUTO) (SAME AS A1 TRIP LOGIC)

NEUTRON MONITORING SYSTEM — REF. 12

MODE SWITCH IN "SHUT-DOWN" — RMS — CR

AUTOMATIC BYPASS AFTER 10 SEC.

MANUAL TRIP SWITCH — RMS — CR

A1 TRIP ACTUATOR LOGIC

INITIATES WHEN RESET SWITCH IS IN RESET POS. (NOTE 3) — RMS — CR — 10 SECONDS TIME DELAY AFTER SCRAM IS INITIATED — SEAL IN — NOTE 8 — SCRAM CONTACTOR

INITIATES WHEN RESET SWITCH IS IN RESET POS (NOTE 3) — RMS — CR — 10 SECONDS TIME DELAY AFTER SCRAM IS INITIATED — SEAL IN — NOTE 8 — SCRAM CONTACTOR — C1577 REACTOR SCRAM TRIP SYS A+B — 4 SH3-K11

A2 TRIP ACTUATOR SAME AS A1 TRIP ACTUATOR

A3 TRIP ACTUATOR SAME AS A1 TRIP ACTUATOR

MANUAL SCRAM TRIP SYS. A — C1537

TRIP ACTUATOR LOGIC

1/3 TRIP LOGIC - SCRAM PILOT VALVES A - GROUP G1 SEE FIG. 4 (SH 1)
1/3 TRIP LOGIC - SCRAM PILOT VALVES A - GROUP G2 SEE FIG. 4 (SH 1)
1/3 TRIP LOGIC - SCRAM PILOT VALVES A - GROUP G3 SEE FIG 4 (SH 1)
1/3 TRIP LOGIC - SCRAM PILOT VALVES A - GROUP G4 SEE FIG 4 (SH 1)
1/3 CLOSE LOGIC - BACK-UP SCRAM VALVE - A — D.C SUPPL
1/3 CLOSE LOGIC - BACK-UP SCRAM VALVE - B — D.C. SUPPL

1A 2A 3A 4A 5A 6A

A CR — MANUAL TRIP ACTUATOR A3 TRIPPED — AUX DEV | CR

A CR — MANUAL TRIP ACTUATOR B3 TRIPPED — AUX DEV | CR

AH CR — DISCHARGE VOL HIGH WATER LEVEL TRIP — AUX DEVICE | CR

AH CR — MAIN CONDENSER LOW VAC TRIP — AUX DEVICE | CR

A CR — MAIN ST. LINE ISOLATION VALVE CLOSURE TRIP — AUX DEVICE | CR

A CR — DISCH. VOLUME HIGH LEVEL TRIP BYPASSED — AUX DEVICE | CR

A CR — MAIN STEAM LINE VALVE CLOSURE & COND LOW VACUUM TRIPS BYPASSED — AUX DEVICE | CR

A CR — MODE SWITCH "SHUTDOWN" TRIP BYPASSED — AUX DEVICE | CR

AH CR — PRIMARY CONTAINMENT PRESS. TRIP APPROACH ALARM — PSH/L 5-16 — LOCAL

A CR — TURBINE STOP VALVE CLOSURE TRIP — AUX DEVICE | CR

A CR — TURBINE CONTROL VALVE FAST CLOSURE TRIP — AUX DEVICE | CR

AH CR — PRIMARY CONTAINMENT HIGH PRESS. TRIP — AUX DEVICE | CR

AH CR — REACTOR VESSEL HIGH PRESS. TRIP — AUX DEVICE | CR

AL CR — REAC VESSEL LOW WATER LEVEL TRIP — AUX DEVICE | CR

AH CR — MAIN STEAM LINE HIGH RAD TRIP — AUX DEVICE | CR

AH CR — NEUTRON MONITORING SYS TRIP — REF 12 | CR

A CR — TRIP ACTUATORS A1 OR A2 TRIPPED — AUX DEVICE | CR

A CR — TRIP ACTUATORS B1 OR B2 TRIPPED — AUX DEVICE | CR

A CR — TURBINE STOP VALVE & CONTROL VALVE TRIPS BYPASSED — AUX DEVICE | CR

FIG 1
TRIP SYSTEM "A"

RD

FOR 216X628 (MONTICELLO) S-P.I. ISSUED — MONIT RASTER CAD "C"

SIGNIFICANT NUMBER	8700				1	3100	1	3330
						30401		
GROUP	1	2	3	4	5	Q	6	

NSP — MONTICELLO NUCLEAR GENERATING PLANT UNIT 1

MONTICELLO NUCLEAR GENERATING PLANT
I.E.D. REACTOR PROTECTION SYSTEM

GENERAL ELECTRIC 729E145 — SHEET 3 — REV 2

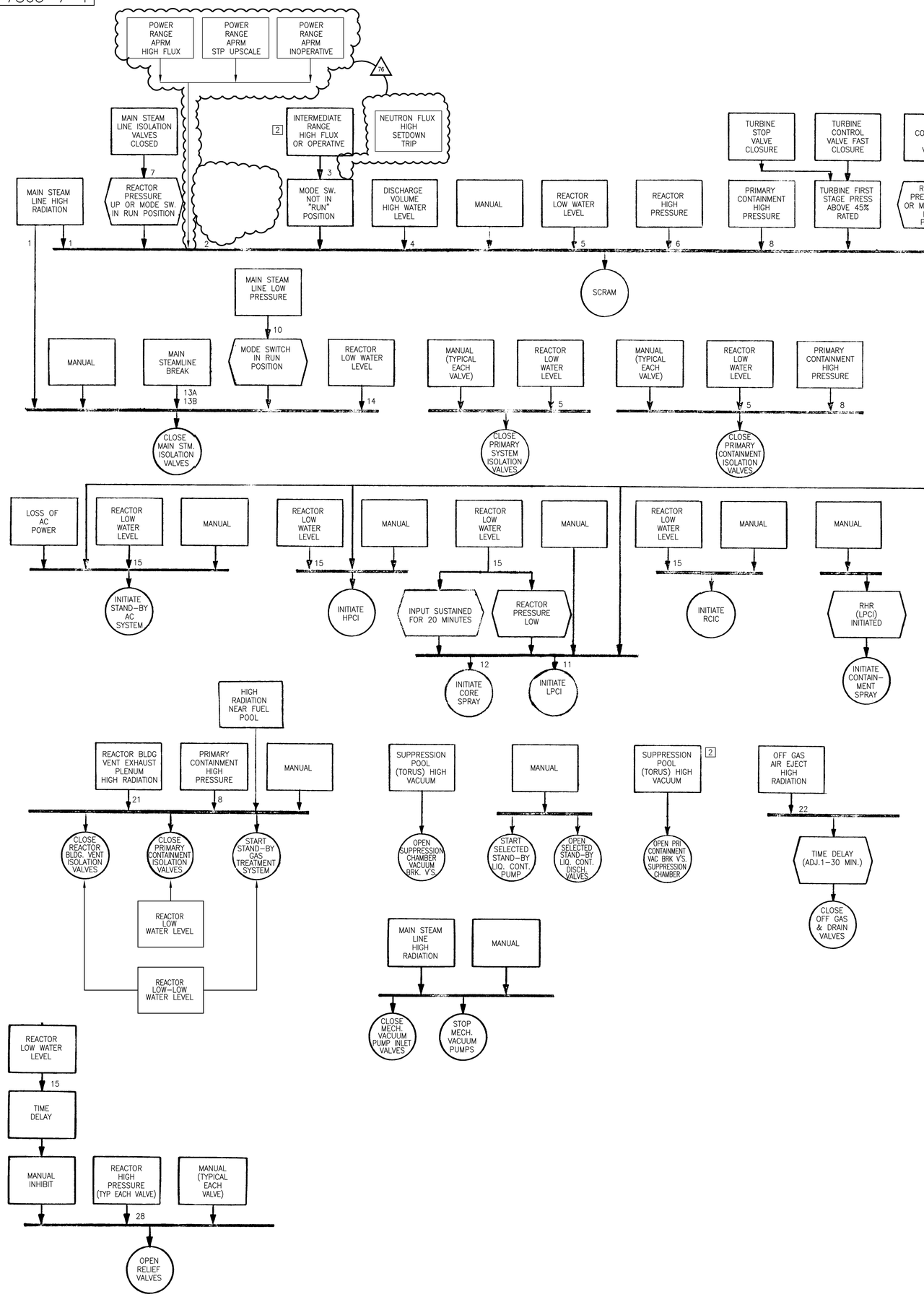
TITLE I.E.D.
REACTOR PROTECTION SYSTEM
FIRST MADE FOR REACTOR PROTECTION SYSTEM

NORTHERN STATES POWER COMPANY
MINNEAPOLIS

SCALE: NONE — REV C

NX-7834-2-2

NX-7865-7-1



REVISIONS
76 EC 10856
DWN: JLL 12-4-09 CHK: DDW 12-8-09 APPR: JAA 12-10-09

LINE NO.	CONDITION (DEVICE#)	SET POINT (114% RATED PWR REF TO RECIRC FLOW)	REMARKS
1	17-251 A,B,C,D	≥10 X BACKGROUND	TRIP 1 OUT OF 2X2(DUAL BUS)
2	APRM 1,2,3,4	114% RATED PWR REF TO RECIRC FLOW	TRIP BOTH BUSES WHEN 2 OR MORE APRM CHANNELS TRIPPED
3	IRM 11,12,13 14,15,16,17,18	95% FULL SCALE	TRIP 1 OUT OF 4X2(DUAL BUS)
4	3-231 A,B,C,D	32 GALLONS	TRIP 1 OUT OF 2X2(DUAL BUS) BYPASS AVAILABLE
5	2-3-57 A,B 2-3-58 A,B	486.5 IN ABOVE VESSEL ZERO	TRIP 1 OUT OF 2X2(DUAL BUS)
6	2-3-55A,B,C,D	1090 PSIA	TRIP 1 OUT OF 2X2(DUAL BUS)
7	2-80 A,B,C,D 2-86 A,B,C,D	≤ 10% VALVE CLOSURE	TRIP BOTH BUSES WHEN 3 OUT OF 4 STM LINES ARE ISOLATED
8	5-12 A,B,C,D	2.0 PSIG	TRIP 1 OUT OF 2X2(DUAL BUS)
9	5-11 A,B,C,D	23 IN. HG	TRIP 1 OUT OF 2X2(DUAL BUS)
10	2-134 A,B,C,D	850 PSIG	TRIP 1 OUT OF 2X2(DUAL BUS) REFUEL & START-UP BYPASS
11	2-3-52 A,B	450 PSIG	
12	2-3-52 A,B	450 PSIG	
13A	2-121A,B,C,D:-122A,B,C,D -123A,B,C,D-124A,B,C,D	200°F	TRIP 2 OUT OF 4 ANY STEAMLINE
13B	2-116A,B,C,D-117A,B,C,D -118A,B,C,D-119A,B,C,D	140% RATED FLOW	TRIP 2 OUT OF 4 ANY STEAMLINE
14	2-3-57A,B,-58A,B	429.5 IN ABOVE VESSEL ZERO	TRIP 1 OUT OF 2X2(DUAL BUS) LEVEL BELOW SCRAM LEVEL
15	2-3-72A,B,C,D	429.5 IN ABOVE VESSEL ZERO	TRIP 1 OUT OF 2X2(DUAL BUS) LEVEL BELOW SCRAM LEVEL
16	APRM 1,2,3,4	VARIOUS	TRIP BOTH BUSES WHEN 2 OR MORE OPRM CHANNELS TRIPPED
17	10-101A,B,C,D	2.0 PSIG	
18			
19			
20			
21	17-452A,B		
22	17-150A,B		
23			
24			
25			
26			
27			
28	2-71 A,B,C,D,E F,G,H	1120 PSIG	
29			
30			
31			
32			
33			
34	ROD WORTH MINIMIZER	N/A	BY-PASSED AT APPROX 10% POWER AND ABOVE
35	3-231E	16 GALLONS	
36	LOAD SWITCH	LOAD>400LBS	
37	LOAD SWITCH	LOAD>1000LBS	
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			

REF:

1. 22A1132 DESIGN SPECIFICATION PRIMARY CONTAINMENT ISOLATION SYSTEM

NOTES:

1. THIS DRAWING SHOWS ONLY PRIMARY INITIATION TRIPS WHICH PERFORM THE INDICATED FUNCTION. EACH SYSTEM HAS ADDITIONAL INITIATION AND/OR OPERATIONAL TRIPS & REFERENCE SHALL BE MADE TO INDIVIDUAL SYSTEM FUNCTIONAL CONTROL DIAGRAMS, INSTRUMENT ENGINEERING DRAWINGS OR DESIGN SPECIFICATIONS AS LISTED IN REF. 1 TO DETERMINE SPECIFIC DETAILS FOR DESIGN PURPOSES.

GENERAL ELECTRIC

This map/document is 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.

729E101

MONTI CAD DWG 'C'

PLANT PROTECTION BLOCK DIAGRAM
RX PROTECTION SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy

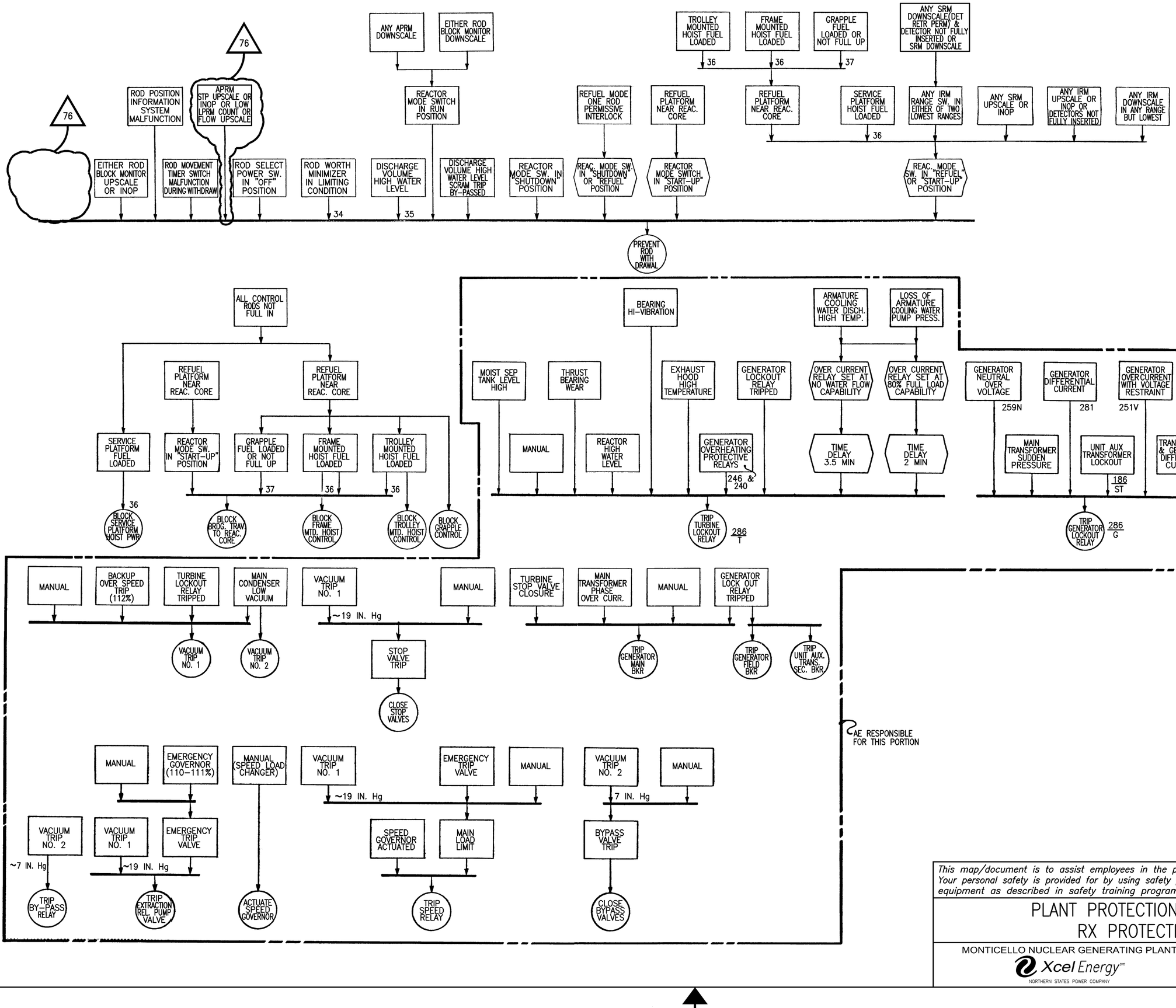
SCALE: NONE

REV 76

NX-7865-7-1

NX-7865-7-2

REVISIONS	
76	EC 10856
DWN: JLL 7-27-10	
CHK: DDW 8-2-10	
APPR: AJD 8-2-10	



GENERAL ELECTRIC

This map/document is 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.

729E101

MONTI CAD DWG 'A'

PLANT PROTECTION BLOCK DIAGRAM
RX PROTECTION SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT

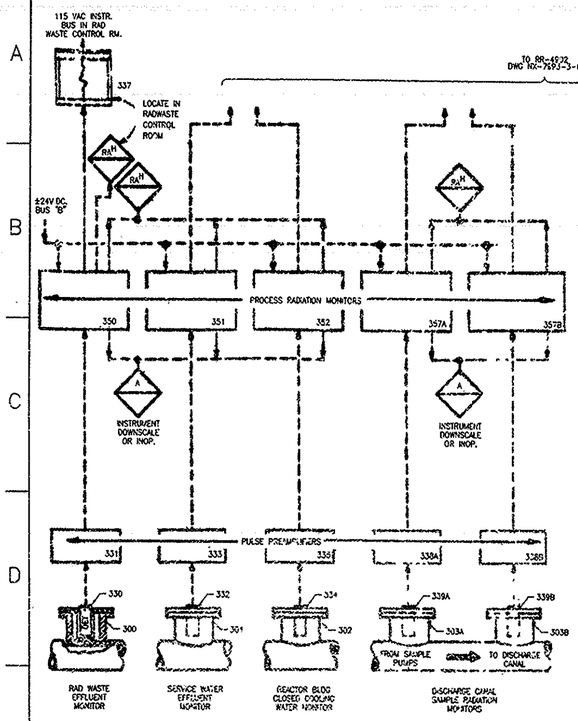
Xcel Energy℠
NORTHERN STATES POWER COMPANY

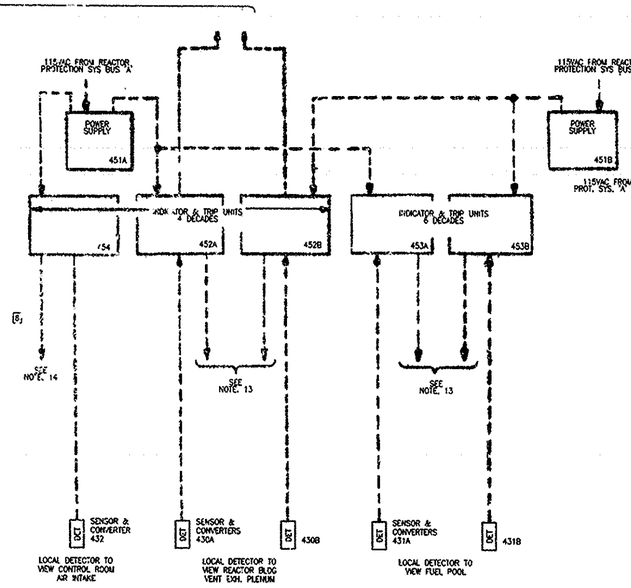
SCALE: NONE | REV 76

NX-7865-7-2

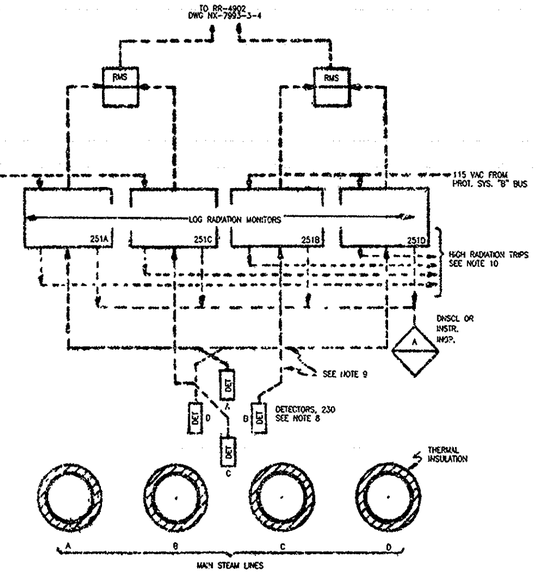
NX-7993-1-1

FCF 216X628(MONTICELLO)-17 P.L. ISSUED

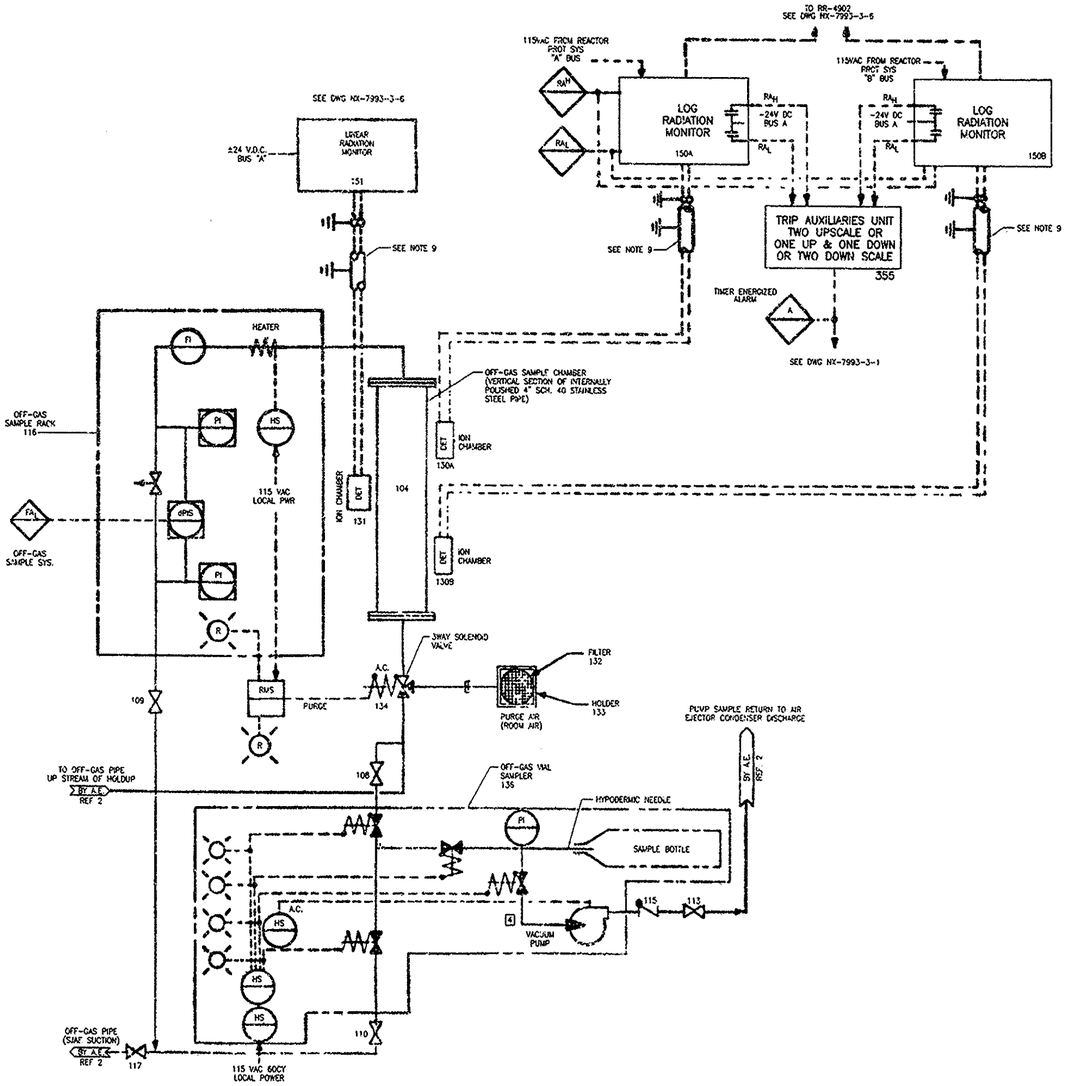




REACTOR BUILDING VENTILATION MONITORS



MAIN STEAM LINE RADIATION MONITORS



OFF-GAS RADIATION MONITORS & SAMPLERS

LEGEND:
DET. GAMMA DETECTOR
RAH RADIATION ALARM HIGH
RAL INSTRUMENT TROUBLE
RARH RADIATION ALARM HIGH HIGH

NOTES:
1. THE STACK GAS SAMPLE LINE BETWEEN THE ISOKINETIC PROBE AND THE FILTER ASSEMBLY SHALL BE 1" X .058 WALL THICKNESS SEAMLESS STAINLESS STEEL TUBING. THE TUBING MINIMUM BEND RADIUS SHALL BE 20". THE TUBING LENGTH SHALL BE JOINED WITH SWAGELOK TYPE 1610-6-316 UNIONS THE TUBING SHALL SLOPE SO THAT CONDENSATE WILL RUN TO THE DRAIN TEE.
2. [illegible] THE FILTER ASSEMBLY SHALL BE PROVIDED WITH A PRESSURE TYPE TEE FOR THE INSERTION OF A CHARCOAL FILTER. ADJACENT TO THE FILTER SITE SHALL PROVIDE SUITABLE PENETRATIONS WITHOUT OBSTRUCTIONS TO ACCESS THE CHARCOAL CARTRIDGE, BOTH BY THE PLANT OPERATOR.
3. TEE SHALL BE DRAIN TYPE SWAGELOK TYPE 1610-T-316.
4. ALARMS IDENTIFIED BY * ARE ACTUATED BY RELAYS IN TRIP AUX. UNIT ASSEMBLY, PART 355.
5. ALL EQUIPMENT AND INSTRUMENTS ARE PREFIXED BY 17 WHICH IS PART 17 ON THE MASTER PARTS LIST.
6. THE MAIN STEAM LINE DETECTORS (230) SHALL BE LOCATED AT BUILDING COLUMN L-6 INSIDE REACTOR BUILDING AT ELEVATION 954'-4" (23 1/2 FROM THE TUNNEL FLOOR). THE DETECTORS SHALL BE ARRANGED SUCH THAT EACH DETECTOR WILL VIEW ALL STEAM LINES WITH APPROXIMATELY THE SAME RESPONSE. THE DETECTOR OR DETECTOR ASSEMBLY MAY BE FASTENED TO A ROD OR PIPE & INSERTED INTO SEALED PIPE WELLS FROM OUTSIDE THE STEAM TUNNEL. CABLES SHALL BE ROUTED CAREFULLY TO MINIMIZE HEAT EXPOSURE. NO LEAD SHIELDING IS REQUIRED.
9. CABLE PER G.E. ENGR. SPEC. A.
10. ONE HIGH RADIATION TRIP OUT OF TWO ON LOGIC CHANNEL A AND ONE HIGH RADIATION TRIP OUT OF TWO ON LOGIC CHANNEL B SHALL:
    A. DELETED
    B. DELETED
    C. TURN OFF MECHANICAL VACUUM PUMP AND CLOSE MECHANICAL VACUUM PUMP LINE VALVES.

    ANY ONE HIGH RADIATION SHALL ALARM (RARH)
11. CUSTOMER REQUESTED MSS COMPUTER INPUTS ARE NOT SHOWN ON THIS DWG. BUT ARE INCLUDED ON REF. 2.
12. FOR LOCATION AND IDENTIFICATION OF INSTRUMENTS SEE MPL ITEM NUMBER 9-51.
13. THE SIGNAL FROM ONE UPSCALE TRIP OR TWO DOWNSCALE TRIPS SHALL:
    A. SHUTDOWN REACTOR BUILDING VENTILATION SYSTEM AND ISOLATE REACTOR BUILDING.
    B. INITIATE STANDBY GAS TREATMENT SYSTEM.
    C. CLOSE PRIMARY CONTAINMENT PURGE AND VENT VALVES.

    ANY ONE UPSCALE TRIP SHALL ALARM (RARH).

    ANY ONE DOWNSCALE TRIP SHALL ALARM (RA_L)

    UPSCALE TRIPS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE REACTOR PROTECTION SYSTEM.
[B] 14. THE UPSCALE TRIP SHALL ALARM AND CLOSE THE CONTROL ROOM AIR INTAKE. THE DOWNSCALE TRIP SHALL ALARM.

REF. ENGR. SPECS:
A. 22A1112 DESIGN SPECIFICATION FOR SPECIAL WIRE AND CABLE.
B. 257N4419AK DESIGN SPECIFICATION RADIATION MONITORING OF PROCESS FLUIDS & GASES.

REFERENCE DRAWINGS:
1. 9190647 OFF-GAS SYS. FLOW DIAGRAM
2. 729E381 ELEM. DIAG. PROCESS RADIATION MONITORING

NOTE:
OE STACK GAS RADIATION MONITORS HAVE BEEN REPLACED BY GENERAL ATOMIC WIDE RANGE GAS MONITORS. SEE P&ID M-142 (NSP DWG No. MH-36159-2 AND MH-36159-3)

REVISIONS

A AS-BUILT: DELETED STACK GAS RADIATION MONITORS PER DRR: MO-82-104
DWN: BAB 9-29-82
CHK: MRG 10-4-82
PROJ: 80Z061
FILMED: 1-11-83

B AS BUILT: REVISED TO REFLECT AS FOUND CONDITION IN ACCORDANCE SRI 92-025 PER DRR: 96-0152
DWN: RHH 8-20-96
CHK: DRN 9-3-96
MOD:
FILMED: 9-11-96

C AS-BUILT: REVISED TO REFLECT THE FULL STEAM DILUTION RECOMBINER SYSTEM MOD PER DRR: MO-02-0131
DWN: JJG 8-15-02
CHK: RJF 8-23-02
MOD: 99G160
FILMED: 9-10-02

D AS-BUILT: REDRAWN TO ASSURE LEGIBILITY OF USAR DRAWINGS ENHANCEMENTS NOT SHOWN FOR CLARITY PER DRR MO-02-0245
DWN: TBN/JJP/RAH 6-10-03
CHK: YYYY 7-31-3
MOD:
FILMED: 9-6-03

RASTER CAD "B"

SIGNIFICANT NUMBER	8700			1	1	PRM
GROUP	1	2	3	4	5	6

MONTICELLO NUCLEAR GENERATING PLANT UNIT 1

MONTICELLO NUCLEAR GENERATING PLANT
PROCESS RADIATION MONTIORING SYSTEM

NORTHERN STATES POWER COMPANY
MINNEAPOLIS

SCALE: NONE | REV D

NX-7993-1-1

NH–36032

VALVES

- GATE (NORMALLY OPEN)
- GATE (NORMALLY CLOSED)
- GLOBE
- MANUAL REMOTE OPERATED
- CHECK
- BUTTERFLY SWING CHECK
- BUTTERFLY
- PLUG OR BALL
- NEEDLE
- FLOW CONTROL
- STOP CHECK STRAIGHT
- SAUNDERS TYPE
- THREE WAY
- FOUR WAY
- ANGLE
- STOP CHECK ANGLE
- GLAND LEAK OFF
- GLAND SEAL WATER
- DIAPHRAGM OPERATED GLOBE VALVE
- EXPLOSIVE ACTUATED VALVE
- DIAPHRAGM OPERATED 3 WAY CONTROL VALVE (CONTROL AIR SUPPLY, PROCESS AIR SUPPLY, LOSS OF CONTROL AIR (FAIL CLOSED), ATM, LOSS OF CONTROL AIR (FAIL OPEN))
- RELIEF (RV)
- (HAND WHEEL AS SPECIFIED) DIAPHRAM OPERATED CONTROL (OPENS ON AIR FAILURE) (CV)
- DIAPHRAM OPERATED CONTROL (CLOSES ON AIR FAILURE) (CV)
- SOLENOID (3 WAY) (SV, N.E.) — DE–ENERGIZED CLOSED, AIR SUPPLY, ENERGIZED CLOSED
- HYDRAULIC OPERATED (HO)
- ELECTRIC MOTOR OPERATED (O–C LIGHT SHOWN ONLY FOR MORE THAN ONE SET) (MO) — INDICATES DOUBLE PACKED STEM (TYPICAL) (D)
- SELF–CONTAINED PRESSURE CONTROL (PCV)
- SELF–CONTAINED CONTROL (TCV TEMPERATURE, FCV FLOW, LCV LEVEL)
- PISTON–AIR OPERATED (AO)
- FOOT VALVE

SYMBOLS

- EJECTOR OR EDUCTOR
- INCREASER, REDUCER
- WELD CAP
- SCREWED CAP
- HOSE CONNECTION (H.C.)
- BLIND FLANGE (B.F.)
- UNION
- EXHAUST HEAD
- ATMOSPHERIC VENT
- FLEXIBLE CONNECTION
- CLOSED DRAIN
- OPEN DRAIN FUNNEL
- (ORW) DRAIN SYSTEM
- AIR VENT (AV)
- DRAIN TRAP (DT)
- STEAM TRAP (ST)
- FLOW NOZZLE ELEMENT (FE)
- "Y" TYPE STRAINER (YS)
- EXPANSION JOINT (XJ)
- EXCESS FLOW CHECK VALVE
- FLOW METER (FM)
- RUPTURE DISC (PSD)
- VACUUM AIR RELEASE VALVE (VAR)
- SAMPLE TEST POINT (MAY CONTAIN SAMPLE TUBING) (SX)
- RADIATION DETECTOR (RE)
- SAMPLE COOLER (SC)
- INSULATED COUPLING OR INSULATED UNION
- SAMPLE NOZZLE (SN)
- IN–LINE FLOW INDICATOR (ROTAMETER) (FI)
- METERING ORIFICE PLATE (FE)

SYMBOLS

- CLOSED SPACER
- RESTRICTING ORIFICE (RO)
- INSULATING FLANGE (IF)
- SPECTACLE FLANGE
- SIGHT FLOW GLASS (FG)
- BASKET STRAINER (SIMPLEX) (BS)
- BASKET STRAINER (DUPLEX) (BS)
- LOGIC (AND, OR)

LINE NUMBERS

LINE IDENTIFICATION LETTERS
LINE NUMBER
PIPE SIZE
PIPE CLASS
FD2–10"–DE

VALVE NUMBERS

VALVE SIZE — MARK No. (3"–54)

LINES

- PROCESS LINE MAIN
- PROCESS LINE AUXILIARY
- BOILER CODE PIPING
- INSTRUMENT CONTROL AIR TUBING
- INSTRUMENT PRIMARY LINE
- INSTRUMENT CAPILLARY TUBING
- INSULATED AND HEAT TRACED LINE
- INSULATED (ONLY) LINE (OR)
- ELECTRICAL AND THERMOCOUPLE LEADS
- DRAWING REFERENCE (NH–XXXXX (D,5)) NSP CONTROLLED DRAWING NUMBER DRAWING COORDINATE
- BURIED PIPE
- CONTAINMENT PENETRATION (UNSLEEVED) (INSIDE / OUTSIDE)
- CONTAINMENT PENETRATION (SLEEVED)
- CONTAINMENT PENETRATION WITH INACCESSIBLE WELDS FOR IWE INSPECTION

TYPICAL NOTATION PIPE SPEC. CHANGE

A — B
THIS WELD IS IN THE LOWER PIPE CLASS

PUMPS

- CENTRIFUGAL
- POSITIVE DISPLACEMENT
- PERISTALTIC (81)

INSTRUMENTATION

- LOCAL BOARD NUMBER (TYPICAL) C52 — (10–120) — GE–APED M.P.L. No.
- PS — H / L — INSTRUMENT VARIABLE
- LOCAL BOARD MOUNTED
- PI — LOCALLY MOUNTED INSTRUMENT
- LR — PT–1 — DENOTES TERMINAL NUMBER FOR MULTI–CHANNEL INSTRUMENT
- E/P OR P/E — ELECTRICAL PNEUMATIC TRANSDUCER LOCALLY MOUNTED
- HCS OR C01 HCS — HAND CONTROL STATION
- HS OR C23 HS — HAND SWITCH
- C04 — PR — CONTROL ROOM BOARD NUMBER (TYPICAL) — CONTROL ROOM BOARD MOUNTED INSTRUMENT
- C08 — TR / PR — CONTROL ROOM BOARD NUMBER (TYPICAL) — CONTROL ROOM BOARD MOUNTED COMBINATION INSTRUMENT
- C18 E/S — SPECIAL ELECTRIC POWER SUPPLY
- AC — AUTOMATIC CONTROL
- TDR — TIME DELAY RELAY
- T — COMPUTER ANALOG INPUT
- PT — COMPUTER INSTRUMENT
- C — COMPUTER DIGITAL INPUT
- C10 A H / L — HIGH / LOW — ALARM
- C30 L O / C — OPEN / CLOSED — LIGHT
- PP — PNEUMATIC POSITIONER
- MLS — MANUAL LOADING STATION

HVAC SYMBOLS

- INTAKE TORNADO DAMPER
- EXHAUST TORNADO DAMPER
- UNIT HEATER
- PO — PNEUMATIC OPERATED DAMPER
- BACKDRAFT DAMPER
- MANUAL DAMPER
- STANDARD MOTOR OPERATED DAMPER
- LOW–LEAKAGE MOTOR OPERATED ISOLATING DAMPER
- H / C — HEATING COIL
- H / E — HEATING ELEMENT
- C / C — COOLING COIL
- C / DX — DIRECT EXPANSION COOLING COIL
- FD — FIRE DAMPER
- OR
- V–DF–XXX — FIRE DAMPER
- LOW — FILTER HIGH OR LOW EFFICIENCY, HEPA OR CHARCOAL.
- BALANCE DAMPER
- MANUAL SHUT–OFF
- DUCT
- FREE AIR PASSAGE
- ROUGHING FILTER
- OUTSIDE AIR INTAKE LOUVER
- Px — PRESSURE TAP
- CENTRIFUGAL FAN
- S — SOLDERED DUCT
- EXHAUST
- SUPPLY

FIRE PROTECTION SYMBOLS

- HOSE STATION
- C — HOSE CABINET
- D — DELUGE VALVE
- S — SPRINKLER ALARM VALVE
- P — SPRINKLER PREACTION VALVE
- FIRE HYDRANT
- FHS — FIRE HOSE STATION

FUNCTION / TYPE / MEASURED VARIABLE		METER: INDICATOR	METER: RECORDER	CONTROLLER: BLIND	CONTROLLER: INDICATING	CONTROLLER: RECORDING	INDICATING TRANSMITTER	TRANSMITTERS (ADD SUFFIX "T" TO INSTRUMENT SYMBOL (eg FT, TT, LT))	ELEMENTS (ADD SUFFIX "E" TO INSTRUMENT SYMBOL (eg FE, TE, LE))	SWITCH (HIGH)	SWITCH (LOW)	SWITCHES	INDICATING SWITCH	INDICATING TRANSMITTING SWITCH	MISC: AMPLIFIER	MISC: DRIVE	MISC: PERIOD OR RATE OF CHANGE	MISC: COMPUTING DEVICE	MISC: RELAY OR AUTO SELECTOR	MISC: TEST POINTS	MISC: MONITOR	MISC: COOLER	MISC: ISOLATOR	MISC: SUMMER	MISC: ANALYZER	MISC: ALARM	MISC: CONVERTER
PRESSURE	P	PI	PR	PC	PIC	PRC						PS	PIS				Pt	PCp		PX						
TEMPERATURE	T	TI	TR	TC	TIC	TRC						TS	TIS				Tt	TCp	Tre	TX						
FLOW	F	FI,FG	FR	FC	FIC	FRC				FSH	FSL	FS	FIS	FITS			Ft	FCp	Fre	FX			FY	FΣ		
LEVEL	L	LI,LG	LR	LC	LIC	LRC				LSH	LSL	LS	LIS	LITS			Lt	LCp		LX						
CONDUCTIVITY	C	CI	CR				CIT					CS									CM					
PRESSURE DIFFERENTIAL	dP	dPI	dPR	dPC	dPIC							dPS	dPIS										dPY			
HYDROGEN ION CONC	pH		pHR																							
MOISTURE	M	MI	MR									MS														
NEUTRON	N	NI	NR									NS			NA		Nt	NCp								
NEUTRON PERIOD	NP	NPI	NPR														NPt									
NEUTRON POWER	NWa																NWat	NWaCp								
OXYGEN	O_2	O_2I	O_2R									O_2S												O_2AN		
POSITION	Po	PoI		PoC		PoR						PoS														
POWER	Wa		WaR	WaC																						
RADIATION	R	RI	RR		RIC	RRC						RS								RM						
SPEED	Sp	SpI		SpC								SpS			SpD		Spt									
DENSITY	D	DI	DR	DC																						
VIBRATION	V		VR									VS								VM						
SAMPLE	S																			Sx		Sc				
SEISMIC	Sm		SmR									SmS														
DISSOLVED OXYGEN	Do						DOIT																	DOAN		
TOTAL ORGANIC CARBON	A	AI																								
HYDROGEN	H_2																							H_2AN		
LEVEL DIFFERENTIAL	dL											dLS														
TEMPERATURE DIFFERENTIAL	dT																								dTA	
VOLTAGE TO CURRENT																										E/I
CURRENT TO VOLTAGE																										I/E

INSTRUMENT SYMBOLS

	PRIMARY CONTROL PANEL NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY PANEL OR RACK NORMALLY ACCESSIBLE TO OPERATOR	BEHIND PANEL INSTRUMENT OR NORMALLY INACCESSIBLE FUNCTION
SHARED DISPLAY, SHARED CONTROL, HMI	XXX / XXXX	XXX / XXXX	XXX / XXXX	XXX / XXXX
COMPUTER FUNCTION (INCLUDING DISTRIB. CNTL. SYS.)	XXX / XXXX	XXX / XXXX	XXX / XXXX	XXX / XXXX
PROGRAMMABLE LOGIC CONTROLLER FUNCTION	XX / XXXX	XX / XXXX	XX / XXXX	XX / XXXX

VALVE LETTER DESIGNATIONS

A = SERVICE INLET
E = SERVICE OUTLET
F = PRECOAT INLET / BACKWASH OUTLET
K = SYSTEM DRAIN VALVE
M = AIR INLET (PLANT AIR)
N = BACKWASH SUPPLY VALVE
P = PRECOAT TANK FILL VALVE
Q = SLOW VENT VALVE
R = RECYCLE, RETURN, RECOVERY, RINSE INLET
U = VESSEL DRAIN VALVE
V = FAST VENT
W = BACKWASH INLET / PRECOAT OUTLET VALVE
X = PRECOAT TANK RETURN
Y = PRECOAT TANK OUTLET VALVE
Z = AUXILIARY TANK OUTLET VALVE

FOLLOWING VALVE LETTER

A, B, C, D, E = VESSEL TAG LETTER

MISCELLANEOUS ABBREVIATIONS:

A.L. – AIR LOCK
A.P.E.D. – ATOMIC POWER EQUIP. DEPT. OF G.E. CO.
A/S – AIR SUPPLY
BD – BALANCE DAMPER
BDD – BACKDRAFT DAMPER
AW – ACID WASTE (CORROSIVE, CAUSTIC)
CRW – EQUIPMENT (CLOSED) RADWASTE
D. – INDICATED DOUBLE PACKED STEM
F.A.I. – FAIL–AS–IS
F.C. – FAIL CLOSED
F.D. – FIRE DAMPER
F.O. – FAIL OPEN
INT – INTEGRATOR
L.O. – LOCK OPEN — L.O.
L.C. – LOCK CLOSE — L.C.
M.A. – MECHANICAL ALTERNATOR
N. – MEETS A.P.E.D. REQUIREMENTS FOR NUCLEAR SERVICE
N.D. – DENOTES NORMALLY DE–ENERGIZED
N.E. – DENOTES NORMALLY ENERGIZED
NW – NORMAL WASTE (CONVENTIONAL)
ORW – FLOOR (OPEN) RADWASTE
OW – OILY WATER WASTE
P.P.S – PLANT PROTECTIVE SYSTEM
R.M. – REMOTE MANUAL
S. – = SUMMER (CFM)
S.P. – = SET POINT
SW – = SANITARY WASTE
TOT. – = TOTAL
t_{RS} – = TEMP ROOM SUMMER
t_{RW} – = TEMP ROOM WINTER
t_{SS} – = TEMP. SUPPLY SUMMER
t_{SW} – = TEMP SUPPLY WINTER
W. – = WINTER (CFM)
W.C.S.P. – = WATER COLUMN STATIC PRESSURE
✱ – = FURNISHED WITH ASSOCIATED EQUIPMENT
⊛ – = FURNISHED BY A.P.E.D.
(21) – = CONNECTION NUMBER ON EQUIPMENT DRAWING

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

This map/document is 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.

M–100
MONTI CAD DWG " J "

P&ID – LEGEND

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy™ NORTHERN STATES POWER COMPANY
SCALE: NONE
REV 81
NH–36032

REVISIONS

76	EC 11951 A/R 01121715	DWN: JJP 3–4–08 CHK: BJR 3–11–08 APPR: RMG 3–12–08
77	EC 11006	DWN: JJP 4–29–11 CHK: DDW 4/29/11 APPR: AR 4–29–11
78	EC 10915,11312	DWN: JJP 6–7–13 CHK: GMP 6–9–13 APPR: NTM 6–9–13
79	EC 24308	DWN: JJP 9–12–14 CHK: BAL 9–15–14 APPR: BJH 11–18–14
80	EC 25011	PAGE 3 ADDED TO .PDF DOC. DWN: JJP 1–28–15 CHK: BAL 1–28–15 APPR: RAD 1–28–15
81	EC 24504	DWN: JJP 4–9–15 CHK: JCG 4–9–15 APPR: BAL 4–9–15

NH-36034

STEAM SEAL SYSTEM
REF. NX-8435-196

H.P. TURBINE G-1

L.P. TURBINE G-1A

CONDENSER E-1A
(H.P. - HOT SHELL)
REF. F.P. 5828-M4-6

CONDENSER E-1B
SEE P. & I. D. M-104
NH-36035

E-15A H.P. HEATER

E-14A H.I.P. HTR.

E-13A I.P. HEATER

L.I.P. HEATER E-12A

L.P. HEATER E-11A

L.I.P. DRAIN COOLER E-DC-12A

L.P. DRAIN COOLER E-DC-11A

STEAM PACKING EXHAUSTER BLOWERS *

STEAM PACKING EXHAUSTER E-4

LINES AND * INSTRUMENTS FURNISHED BY GE-LSTG

NOTES:
1. ABANDONED-IN-PLACE.
2. X) FOR DETAILS OF SCHEME SEE M-104 (B,1) (NH-36035)

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

REVISIONS

81	EC 17323 DWN: JJP 5-13-11 CHK: DDW 5-14-11 APPR: JAZ 5-14-11
82	EC 19253 DWN: JJP 2-13-12 CHK: BAL 2-14-12 APPR: JPC 2-29-12
83	EC 18309 DWN: JJP 3-7-12 CHK: BAL 3-8-12 APPR: AWL 3-9-12
84	EC 15625,20817,21374, 21628 DWN: JJP 6-10-13 CHK: PEB 6-11-13 APPR: JRS 6-11-13
85	EC 22279 DWN: JJP 6-20-13 CHK: JRS 6-20-13 APPR: AWL 6-20-13
86	EC 25523 DWN: JJP 4-24-15 CHK: BAL 4-27-15 APPR: RES 4-27-15
87	EC 27954 DWN: JJP 4-3-17 CHK: AJR 4-4-17 APPR: BAL 4-4-17
88	601000000946 601000001331 DWN: JJP 4-29-19 CHK: 600000533408 APPR: 600000523512
89	601000000141 DWN: JJP 5-2-19 CHK: 600000537011 APPR: 600000537621

M-103

MONTI CAD DWG 'Q'

TURBINE & EXTRACTION STEAM
P&ID SHEET 1 OF 2

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 89

NH-36034

NH-36035

CONDENSER E-1A
SEE P & ID M-103 NH-36034

WATER SEAL

CONDENSER E-1B
(L.P. COLD SHELL)
REF FP 5828-M4-4

CONDENSER CONNECTION NUMBER (TYP)

CONDENSATE & VENT LINES FROM RECOMBINER SYSTEM

FROM RECOMBINER NH-54817-4 (A,7) (D,1)

CN-125-4"-EN1C

GOLE-107-6"-HN2C

TO CONDENSER E-1A M-103 NH-36034 (A,2)

HD18-12"-HB

HD19-16"-HA

AIR EJECTOR E-2A DRAIN M-104-1 NH-36035-2 (C,5)

AIR EJECTOR E-2B DRAIN M-104-1 NH-36035-2 (A,5)

TO AO-1084A

TO AO-1084B

FROM EAST HALF OF CONDENSER

FROM WEST HALF OF CONDENSER

EXTRACTION POINT (TYP)

L.P. TURBINE G-1B

7TH STAGE EXTRACTION CONN. W/ PX-1239 AT HTR E-14B (C,3)

8TH STAGE EXTRACTION CONN. W/ PX-1240 AT HTR E-13B (B,3)

TO RV-1245 M-104-1 NH-36035-2 (B,6)

TO RV-1244 M-104-1 NH-36035-2 (C,6)

OFF-GAS SAMPLE DRAW M-142 NH-36159 (B,6)

INTERLOCK FROM HEATER BLOCK VALVES (MO-1134 & MO-1615) (FEEDWATER) M-106 NH-36037 (B,5)

INTERLOCK FROM HEATER BLOCK VALVES (MO-1089 & POS-1119) (CONDENSATE) M-105 & M-106 NH-36036 (C,3) NH-36037 (B,3)

FROM TURBINE TRIP M-132 NH-36050 (D,6)

TURBINE TRIP TO CV-1051 (A,6)

FROM STEAM SEAL REGULATOR M-103 NH-36034 (E,3)

L.I.P. HEATER E-12B

L.P. HEATER E-11B

L.I.P. DRAIN COOLER E-DC-12B

L.P. DRAIN COOLER E-DC-11B

TO TI-1711 CONTROL ROOM PANEL C20 NOTE 1

INTERLOCK FROM HEATER BLOCK VALVES (MO-1089 & POS-1119) (CONDENSATE) M-105 & M-106 NH-36036 & NH-36037 (C,3) (B,3)

H.P. TURBINE EXHAUST STEAM
M-102 NH-36033 (E,3)

H.P. HEATER E-15B

H.I.P. HEATER E-14B

I.P. HEATER E-13B

TO PT-1225 (D,6)

TO PT-1224 (D,6)

MOISTURE SEPARATOR DRAIN TANKS T-6C & T-6D M-102 NH-36033 (B,3)

TO PT-1211 (D,6)

F.W. M-106 NH-36036 (B,6)

F.W. M-105 NH-36036 (D,4)

F.W. M-105 NH-36036 (D,3)

F.W. M-106 NH-36036 (B,2)

HYDRO VENT

X) TYPICAL SCHEME

TE 7990-1 (ETC) TS 7990 TI 7990 — ENCLOSURE WITH SELECTOR SWITCH & TEMP-INDICATOR LOCATED NORTH-EAST CORNER OF CONDENSER ROOM

TE 7991-1 (ETC) TS 7991 TI 7991 — ENCLOSURE IS LOCATED NEAR HYDROGEN SEAL OIL SYSTEM

DETAIL A
E-13B

DETAIL B
E-14B

DETAIL C
E-15B

NOTE:
1. ABANDONED-IN-PLACE.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

REVISIONS

84	EC 15625,20817,21374 DWN: JJP 6-10-13 CHK: PEB 6-10-13 APPR: JRS 6-11-13
85	EC 22279 DWN: JJP 6-20-13 CHK: JRS 6-20-13 APPR: AWL 6-20-13
86	EC 25778 DWN: JJP 3-1-17 CHK: BAL 3-2-17 APPR: SJH 3-2-17
87	601000001301 DWN: JJP 4-9-19 CHK: 600000523925 APPR: 600000505982
88	601000000946 601000001331 DWN: JJP 4-29-19 CHK: 600000533408 APPR: 600000523512
89	601000000141 DWN: JJP 5-2-19 CHK: 600000537011 APPR: 600000537621

M-104

MONTI CAD DWG 'Y'

TURBINE & EXTRACTION STEAM
P & ID SHEET 2 OF 2

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy®
NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 89

NH-36035

NH-36035-2

REVISIONS
076 EC7318 A/R 01012217 DWN: JJP 3-29-06 CHK: BAL 3-30-06 APPR: JSO 3-30-06
77 EC11951 A/R 01121715 DWN: JJP 3-4-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78 EC15325 DWN: JJP 3-15-10 CHK: PEB 3-15-10 APPR: JPC 3-17-10
79 EC16937 DWN: JJP 10-20-10 CHK: BAL 10-21-10 APPR: BJR 10-21-10
80 EC17001 DWN: JJP 3-7-11 CHK: BAL 3-7-11 APPR: NEO 3-8-11
81 EC14372 DWN: JJP 3-9-11 CHK: BAL 3-10-11 APPR: BL 3-10-11
82 EC16861 DWN: JJP 4-18-11 CHK: BAL 4-18-11 APPR: DZ 4-25-11

AIR EJECTOR E-2A

AIR EJECTOR E-2B

INTER-CONDENSER

TO CONDENSER E-1B CONN 29 M-104 NH-36035 (D,6)

TO CONDENSER E-1B CONN 15 M-104 NH-36035 (A,8)

TO CONDENSER E-1B CONN 5 M-104 NH-36035 (D,8)

FROM PRIMARY STEAM M-102 NH-36033 (E,3)

FROM SV-1083A & B M-103 NH-36034 (D,1)

AIR FROM CONDENSER E-1A M-103 NH-36034 (D,1)

TO RECOMBINER OG3-10"-ED NH-54817-4 (B,1)

SJAE ROOM VENT

NH-54818-1 NH54817-4 (C,8) HI RAD TIMER M-142 NH-36159 (D,4) LOW 2ND STAGE STEAM PRESSURE

NH-54818-1 NH54817-4 (C,8) HI RAD TIMER M-142 NH-36159 (D,4) LOW 2ND STAGE STEAM SUPPLY PRESSURE

OFF-GAS SAMPLE PUMP RETURN OG30-1"-ED M-142 NH-36159 (C,6)

RECONBINER STEAM TRAP RETURN CN-142-1"-EN1C NH-54817-4 (C,1)

SERVICE AIR PURGE OG3-1"-ED OG-37-2 1"-130 OG-189

FILTER F7

DIV I HIGH MAIN STEAM RADIATION REF. 1,2,3

DIV I GROUP II AUTO INIT.

TRIP PUMP CLOSE VALVES

SEAL WATER COOLER E-3

SERVICE WATER M-110 NH-36041 (B,5)

DIV II HIGH MAIN STEAM RADIATION REF. 1,2,3

DIV II GROUP II AUTO INIT.

TRIP MVP

TO OFF-GAS LINE M-142 NH-36159 (B,6)

CONDENSATE SERVICE WATER M-114-1 NH-85509 (B,1)

CONDENSER MECHANICAL VACUUM PUMP P-3

SEPARATOR T-72

LOCATED IN PUMP ROOM

M-141 NH-36047-1 (A,5)(B,6)

M-131 NH-36049-11 (C,2)

M-131 NH-36049-11 (B,2)

M-131 NH-36049-3 (A,6)

NOTE:
X) FOR DETAILS OF SCHEME SEE M-104 (B,1) (NH-36035)

REFERENCE DRAWINGS:

1. NUCLEAR BOILER SYSTEM STEAM SUPPLY.....NH-36241 M-115
2. IED PROCESS RADIATION MONITORING SYSTEM.....NX-7993-1-1, -1-2 & -3-4
3. IED PRIMARY CONTAINMENT ISOLATION.....NX-7823-4-17, -4-4 & -4-5

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-104-1
MONTI CAD DWG 'C'

P&ID STEAM JET AIR EJECTORS

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 82

NH-36035-2

NH-36036

MOUNTED LOCALLY NEAR RACK C-208 5' BETWEEN EACH SWITCH

C5-1"-GB

4 SPRAY CONN'S (TYP)

C5-2"-GB EXHAUST HOOD SPRAY

REACTOR SCRAM L.P. TURBINE G-1A 11

REACTOR SCRAM L.P. TURBINE G-1B 12

EXHAUST HOOD

REACTOR FEED PUMPS M-106 NH-36037 (B,4)(D,4)

P-2A RECIRC (CONDENSER NOZZLE) FW3

P-2B RECIRC (CONDENSER NOZZLE) FW4

8" x 6"

FROM 8 BASKET TIPS & 8 SOLENOID VALVES PANEL C99A

FROM 8 BASKET TIPS & 8 SOLENOID VALVES PANEL C99B

CONDENSATE TO I.P. HTR E-13A M-106 NH-36037 (C,1)

C4A-16"-GB

VENT ORW

TO TI-1711

STEAM M-103 NH-36034 (C,4)

L.I.P. HEATER E-12A

L.I.P. HEATER E-12B

DRAIN

CONDENSATE TO I.P. HTR E-13B M-106 NH-36037 (A,1)

C4B-16"-GB

COND M-103 NH-36034 (B,5)

L.I.P. DRN CLR E-DC-12A

L.I.P. DRN CLR E-DC-12B

NH-36035 COND. M-104 B,4)

CONDENSER E-1A (H.P. - HOT SHELL) REF F.P. 5828-M4-6

CONDENSER E-1B (L.P. - COLD SHELL) REF F.P. 5828-M4-4

WATER SEAL

ESW BACKUP

MAKEUP

SW2-18"-HF

C10-3"-HB

NH-36034 (B,4)

NH-36035 (B,5)

L.I.P. HEATER E-11A

L.I.P. HEATER E-11B

COND M-103 NH-36034 (A,4)

L.P. DRN CLR E-DC-11A

L.P. DRN CLR E-DC-11B

FROM CONDENSATE DRIP TANK PUMPS M-138 NH-36044 (A,3)

RWN22-3"-HC

C10-10"-HB

C10-12"-HB

NH-36035 COND. M-104 (A,5)

RECIRC 10"

REACTOR FEEDPUMP SEAL SYSTEM M-106-1 NH-36037-2 (A,8) (B,8)

SDT2-4"-DC

SDT1-4"-DC

SDT1-3"-DC

INTERLOCK TO SPILL VALVES CV-1012 CV-1199A, B CV-1033 M-103 NH-36034 (C,1)(B,3)(D,5)

MO-16"-26

REACTOR CLEANUP SYSTEM M-141 NH-36047-1 (C,6)

REW7-4"-HC

MULTI-POINT P.B.

C1A-30"

C1B-30"

V6-1"-GB VENT

V7-1"-GB

SLOPE

NOTE 1

SEE DET. A (B,6) 30"-SP415 FW-2-1

SEE DET. B (A,6) 30"-SP415 FW-2-2

CONDENSATE PUMPS (HALF CAPACITY) 90

EQUIPMENT SUMP

SEAL WATER

P-1A 11

P-1B 12

C2-12"-GB

C3-24"-GB

C4-24"-GB

C5-10"-GB

C5-10"-GB RECIRC

C5-2½"-GB

TO EXHAUST HOOD SPRAY (E,2)

C6-8"-GB REJECT

C4A-16"-GB

C4B-16"-GB

C5-10"-GB RECIRC

C2A-16"-GB

C2B-16"-GB

AIR EJECTOR E-2A 11

AIR EJECTOR E-2B 12

INTER COND

STEAM PACKING EXHAUSTER E-4

CONDENSATE DEMINERALIZER NH-36038-2 (D,1)

M-107 NH-36038-2 (B,3)

M-141 NH-36047-1 (A,5)

M-118 NH-36244 (B,6)

HPCI-100

CRD-3"-GB

CRD-171

CRD-170

REACTOR / TURBINE BLDG.

NH-36250(B,5)

DETAIL A 11

TO P-1A (C,4)

FW-172-1 FW-171-1 FW-2-1 1"-V19 FW-3-1 2"-V19 FW-1-1 FW-3-3 FW-1-3 M-2500 NH-100320 (A,3)

DETAIL B 12

TO P-1B (C,4)

FW-171-2 FW-172-2 FW-2-2 2"-V19 FW-1-2 1"-V19 FW-3-2 FW-1-4 FW-3-4 M-2500 NH-100320 (A,3)

RFP SEAL SYSTEM M-106-1 NH-36037-2 (D,8)

4"-234 FW-123 4"-26 FW-122 C13-4"-GB

CONDENSATE DEMINERALIZER SYSTEM M-107 NH-36038-2 (E,4)

FREE AIR TEMP

BAROMETRIC PRESSURE

COND. PUMP P-1A STATOR

SEE TABLE FOR SENSOR ELEMENT AND COMPUTER-POINT-SUMMARY FOR ASSOCIATED COMPUTER POINTS.

CONDENSATE PUMPS MOTOR BEARINGS

P-1A ELEMENT	P-1B ELEMENT
TE-134	TE-135
TE-138	TE-139
TE-142	TE-143
TE-1712A	TE-1712B
TE-1712C	TE-1712D
TE-1712R	TE-1712S
VE-4131A	VE-4131B
VE-4132A	VE-4132B
VE-4133A	VE-4133B
VE-4134A	VE-4134B

INTERLOCK TO SPILL VALVES CV-1051 CV-1226A, B CV-1072 M-104 NH-36035 (A,6)(C,7)(C,5)

3" MAKE-UP

10" MAKE-UP

12" MAKE-UP

EMERGENCY SERV. WATER BACKUP NH-36041 (D,5)

F.W. & COND. RECIRC. NH-36037 (C,8)

DEMIN MAKE-UP CST'S M-108 NH-36039 (A,3)

TO AND FROM CONDENSATE STORAGE TANK M-108 NH-36039 (A,4)

C6-8"-HJ REJECT

TO RECOMBINER SYSTEM NH-54817-4 (A,7) CNC-134-8"-E2

FROM RECOMBINER SYSTEM NH-54817-4 (A,7) CNC-132-8"-E2

C6-8"-GB REJECT

C10-3"-HJ

C10-12"-HJ

C6-8"-HJ REJECT

C5-10"-GB RECIRC

C6-8"-GB REJECT

NOTE 1: ABANDONED IN PLACE

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

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M-105

MONTI CAD DWG 'AD'

P&ID CONDENSATE & FEEDWATER

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy® NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 90

NH-36036

REVISIONS

80	EC 16861	DWN: JJP 4-18-11 CHK: BAL 4-18-11 APPR: DZ 4-25-11
81	EC 11006	DWN: JJP 4-29-11 CHK: DDW 4/29/11 APPR: AR 4-29-11
82	EC 18085	DWN: JJP 5-2-11 CHK: BAL 5-4-11 APPR: DJ 5-5-11
83	EC 18294	DWN: JJP 6-20-11 CHK: AWL 6-20-11 APPR: DDW 6-20-11
84	EC 16179	DWN: JJP 12-6-11 CHK: DDW 12-6-11 APPR: RKJ 12-6-11
85	EC 20427	DWN: JJP 7-26-12 CHK: BAL 7-27-12 APPR: JPC 8-1-12
86	EC 10946,21113,15342	DWN: JJP 6-11-13 CHK: PEB 6-11-13 APPR: KAT 6-11-13
87	EC 25382	DWN: JJP 4-30-15 CHK: BAL 4-30-15 APPR: WTM 4-30-15
88	EC 23290	DWN: JJP 4-20-17 CHK: AJR 4-22-17 APPR: PRN 5-3-17
89	601000000410	DWN: JJP 1-24-18 CHK: BAL 1-24-18 APPR: DAM 1-24-18
90	601000000210	DWN: JJP 4-16-18 CHK: AJR 4-16-18 APPR: JJH 4-16-18

NH-36037

REVISIONS

88	EC24170	DWN: JJP 5-7-15 CHK: BAL 5-7-15 APPR: AEA 5-7-15
89	EC24204	DWN: JJP 5-18-15 CHK: BAL 5-18-15 APPR: WS 5-18-15
90	EC26537	DWN: JJP 12-10-15 CHK: BAL 12-15-15 APPR: CWB 12-16-15
91	EC25778	DWN: JJP 3-1-17 CHK: BAL 3-2-17 APPR: SJH 3-2-17
92	6MODMM027316	DWN: JJP 4-15-19 CHK: 6000000528256 APPR: 6000000528232

NOTES:

1. ▷ CONTAINS STAINLESS REPLACEMENT TUBING. REFER TO MOD. 97Q040.
2. X) FOR DETAILS OF SCHEME SEE M-104 (B,1) (NH-36035)
3. THE CROSSFLOW XT SIGNAL PROCESSING UNIT (FCP-5617) USES FEEDWATER VELOCITY AND DENSITY (FROM ULTRASONIC TRANSDUCERS) AND PIPE TEMPERATURE (FROM THE THERMOCOUPLE TEMPERATURE ELEMENT) TO CALCULATE FEEDWATER FLOW.
4. CHANGES TO THE FEEDWATER SYSTEM CONFIGURATION DOWNSTREAM OF THE #15 HEATERS COULD IMPACT THE ACCURACY OF THE CROSSFLOW EQUIPMENT. EVALUATE THE POTENTIAL FOR NOISE AND FLOW PROFILE IMPACTS WHICH COULD AFFECT THE CROSSFLOW SYSTEM PRIOR TO IMPLEMENTING SUCH CHANGES.
5. DO NOT USE CALCIUM SILICATE (CAL-SIL) INSULATION ON THE PORTIONS OF THE FEEDWATER SYSTEM PIPING NEAR THE CROSSFLOW TRANSDUCERS. CONTAMINATION OF THE TRANSDUCER-TO-PIPING CONNECTION CAN IMPACT THE ACCURACY OF THE CROSSFLOW EQUIPMENT.
6. MATERIAL UPGRADES IN LINES C4A/B-16"-GB, FW2A/B-14"-DE AND FW3/4-8"-DE TO ELIMINATE HELB CRACKS. SEE ISOMETRICS NX-13142-1, NX-13142-2, NX-13142-52, NX-13142-53 AND NX-13142-135.
7. ABANDONED-IN-PLACE.

P-2A (C-29/A) ELEMENT	P-2B (C-29/B) ELEMENT
TE-1505A	TE-1505C
TE-1506A	TE-1506D
TE-1507A	TE-1507D
TE-1712E	TE-1712K
TE-1712F	TE-1712L
VE-1510A	VE-1510B
VE-1511A	VE-1511B
VE-1512A	VE-1512B
VE-1513A	VE-1513B
POE-1515A	POE-1515B
LS-1520A	LS-1520B
TE-1508A	TE-1508B
TE-1509A	TE-1509B
TE-1712G	TE-1712M
TE-1712H	TE-1712N
TE-1712J	TE-1712P
TE-1500A	TE-1500C
TE-1501A	TE-1501C
TE-1502A	TE-1502C
TE-1503A	TE-1503C
TE-1504A	TE-1504C
VT-4127A	VT-4127B
VT-4128A	VT-4128B
VT-4129A	VT-4129B
VT-4130A	VT-4130B
VT-4135A	VT-4135B

SEE TABLE FOR SENSOR ELEMENT AND COMPUTER-POINT-SUMMARY FOR ASSOCIATED COMPUTER POINTS.

CONDENSATE AND REACTOR FEEDWATER TEMPERATURE AND VIBRATION MONITOR

R.F.P. P-2A (AC AUX L.O. PUMP P-71A) — C06 HS 1243

R.F.P. P-2B (AC AUX L.O. PUMP P-71B) — C06 HS 4243

SEE NH-36037-3 FOR LUBE OIL SYSTEM

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-106

MONTI CAD DWG 'AF'

P&ID CONDENSATE & FEEDWATER

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy® NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 92

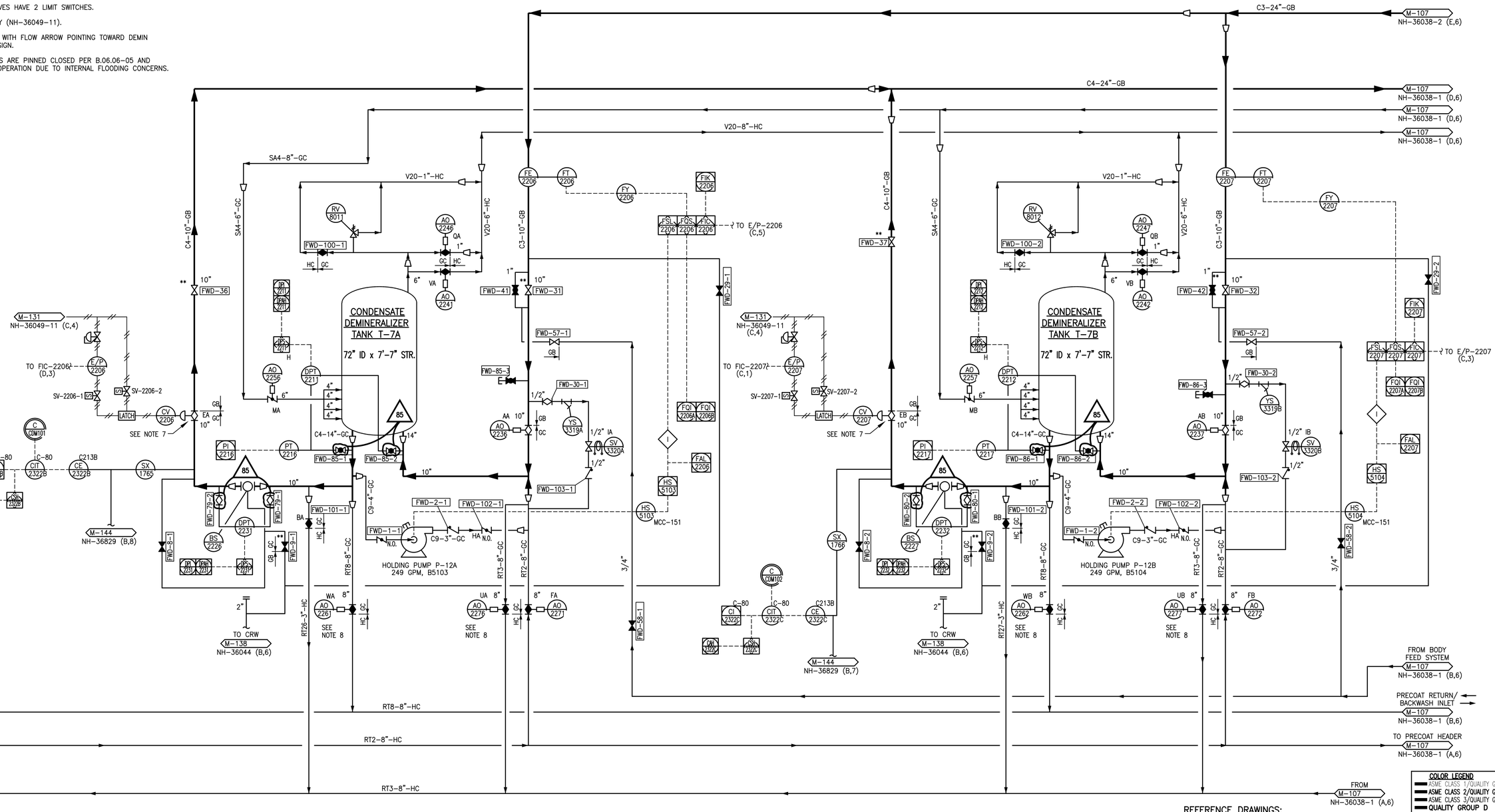
NH-36037

NH-36038

NOTES:
1. SEE GRAVER PROPOSAL/WORK ORDER FOR EXTENT OF EQUIPMENT FURNISHED BY GRAVER.
2. LEGEND – SEE NH-36032
3. VALVES AND INSTRUMENTS MARKED WITH "**" ARE NOT PROVIDED BY GRAVER.
4. ONLY PIPING ON ADVANCE PRECOAT SKID BY GRAVER.
5. ALL ON/OFF AUTOMATIC VALVES HAVE 2 LIMIT SWITCHES.
6. INSTRUMENT AIR (IA) SUPPLY (NH-36049-11).
7. CONTROL VALVES INSTALLED WITH FLOW ARROW POINTING TOWARD DEMIN VESSEL (EC-18312) BY DESIGN.
8. THE "U" AND "W" AO VALVES ARE PINNED CLOSED PER B.06.06-05 AND 2154-33 DURING NORMAL OPERATION DUE TO INTERNAL FLOODING CONCERNS.

REVISIONS

84	EC 23794
	DWN: JJP 4-2-14
	CHK: BAL 4-2-14
	APPR: CLT 4-3-14
85	EC 24059
	DWN: JJP 5-28-15
	CHK: BAL 5-28-15
	APPR: JCG 5-28-15



REFERENCE DRAWINGS:

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COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

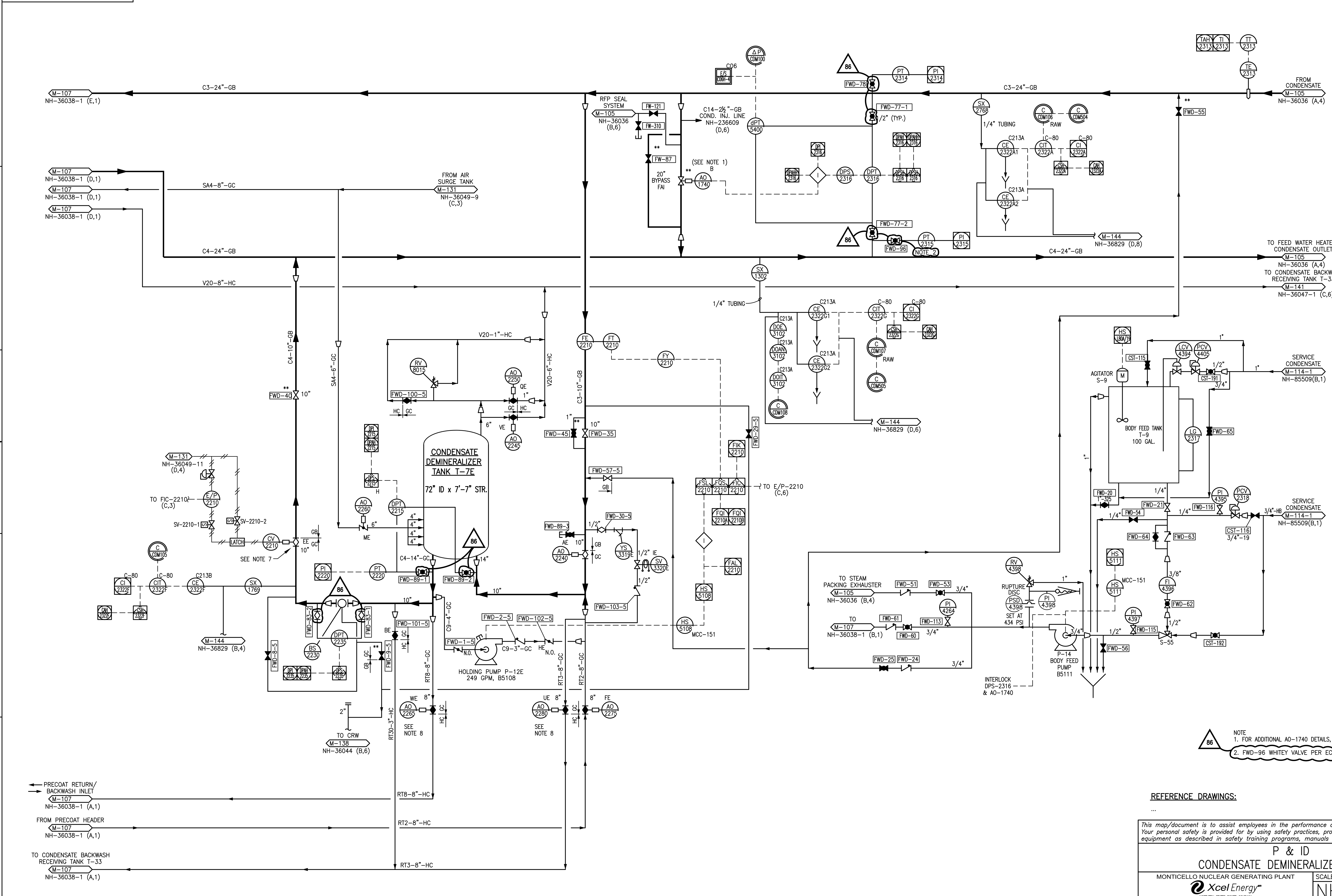
M-107
MONTI CAD DWG

P & ID
CONDENSATE DEMINERALIZER SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE
REV 85

NH-36038


6
5
4
3
2
1
E
D
C
B
A
M-107
NH-36038-1 (E,1)
C3-24"-GB
RFP SEAL SYSTEM
M-105
NH-36036 (B,6)
FW-121
FW-310
C06
C14-2½"-GB COND. INJ. LINE
NH-236609 (D,6)
dPT 5400
ΔP CDM100
FWD-78
FWD-77-1
1/2" (TYP.)
PT 2314
PI 2314
FWD-77-2
PT 2315
PI 2315
FWD-96
NOTE 2
SX 2768
1/4" TUBING
C213A
CE 2322A1
CIT 2322A
CI 2322A
C-80
CE 2322A2
C CDM106
C CDM504
RAW
M-144
NH-36829 (D,8)
TAH 2313
TI 2313
TT 2313
TE 2313
FROM CONDENSATE
M-105
NH-36036 (A,4)
FWD-55
M-107
NH-38038-1 (D,1)
M-107
NH-36038-1 (D,1)
M-107
NH-36038-1 (D,1)
SA4-8"-GC
FROM AIR SURGE TANK
M-131
NH-36049-9 (C,3)
FWD-87
20" BYPASS FAI
(SEE NOTE 1) B
AO 1740
DPS 2316
DPT 2316
C4-24"-GB
TO FEED WATER HEATERS CONDENSATE OUTLET
M-105
NH-36036 (A,4)
TO CONDENSATE BACKWASH RECEIVING TANK T-33
M-141
NH-36047-1 (C,6)
V20-8"-HC
SX 1302
1/4" TUBING
C213A
CE 2322G1
CIT 2322G
CI 2322G
DOE 3102
DOAN 3102
DOIT 3102
C CDM108
CE 2322G2
C CDM107
C CDM505
RAW
M-144
NH-36829 (D,6)
C4-10"-GB
SA4-6"-GC
V20-1"-HC
V20-6"-HC
RV 8015
FWD-100-5
AO 2250
QE
VE
AO 2245
CONDENSATE DEMINERALIZER TANK T-7E
72" ID x 7'-7" STR.
FE 2210
FT 2210
FY 2210
C3-10"-GB
FWD-45
FWD-35
FWD-29-5
FIK 2210
FWD-57-5
FSL 2210
FQS 2210
FIC 2210
TO E/P-2210 (C,6)
FQI 2210A
FQI 2210B
FAL 2210
HS 5108
HS 5108
MCC-151
FWD-40
M-131
NH-36049-11 (D,4)
TO FIC-2210 (C,3)
E/P 2210
SV-2210-2
SV-2210-1
LATCH
CV 2210
SEE NOTE 7
AO 2260
DPT 2215
ME
C4-14"-GC
FWD-89-1
FWD-89-2
FWD-89-3
AE
AO 2240
FWD-30-5
YS 3319E
SV 3320E
FWD-103-5
C CDM105
CI 2322F
CIT 2322F
CE 2322F
C-80
C213B
SX 1769
PI 2220
PT 2220
FWD-83-2
FWD-83-1
DPT 2235
BS 2230
M-144
NH-36829 (B,4)
FWD-8-5
FWD-9-5
FWD-101-5
C9-4-GC
FWD-2-5
FWD-102-5
FWD-1-5
C9-3"-GC
HOLDING PUMP P-12E
249 GPM, B5108
RT8-8"-GC
RT3-8"-GC
RT2-8"-GC
TO CRW
M-138
NH-36044 (B,6)
RT30-3"-HC
AO 2265
SEE NOTE 8
AO 2280
SEE NOTE 8
AO 2275
PRECOAT RETURN/ BACKWASH INLET
M-107
NH-36038-1 (A,1)
RT8-8"-HC
FROM PRECOAT HEADER
M-107
NH-36038-1 (A,1)
RT2-8"-HC
TO CONDENSATE BACKWASH RECEIVING TANK T-33
M-107
NH-36038-1 (A,1)
RT3-8"-HC
HS 180A/19
CST-115
AGITATOR S-9
BODY FEED TANK T-9 100 GAL.
LCV 4394
PCV 4405
CST-191
SERVICE CONDENSATE
M-114-1
NH-85509(B,1)
LG 2317
FWD-65
FWD-20
FWD-21
FWD-54
FWD-116
PI 4395
PCV 2318
SERVICE CONDENSATE
M-114-1
NH-85509(B,1)
CST-116
FWD-64
FWD-63
HS 5111
HS 5111
MCC-151
FI 4396
FWD-62
TO STEAM PACKING EXHAUSTER
M-105
NH-36036 (B,4)
FWD-51
FWD-53
PI 4264
TO
M-107
NH-36038-1 (B,1)
FWD-61
FWD-60
FWD-113
FWD-25
FWD-24
RV 4398
RUPTURE DISC
PSD 4398
SET AT 434 PSI
PI 4398
P-14 BODY FEED PUMP B5111
PI 4397
FWD-115
FWD-56
S-55
CST-192
INTERLOCK DPS-2316 & AO-1740
86

REVISIONS	
82	EC18171
	DWN: JJP 5-18-11 CHK: DDW 5-18-11 APPR: EJS 5-18-11
83	EC18294
	DWN: JJP 6-20-11 CHK: AWL 6-20-11 APPR: DDW 6-20-11
84	EC18312
	DWN: JJP 10-6-11 CHK: WGN 10-12-11 APPR: RKJ 11-15-11
85	EC23794
	DWN: JJP 4-2-14 CHK: BAL 4-2-14 APPR: CLT 4-3-14
86	EC24059
	DWN: JJP 5-28-15 CHK: BAL 5-28-15 APPR: JCG 5-28-15

NOTE
1. FOR ADDITIONAL AO-1740 DETAILS, SEE NH-36038-4 (AO-1740 CONTROLS)
2. FWD-96 WHITEY VALVE PER EC8143.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

REFERENCE DRAWINGS:
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This map/document is 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.

M-107
MONTI CAD DWG "G"

P & ID
CONDENSATE DEMINERALIZER SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 86

NH-36038-2

NH-36041

REVISIONS

111	EC 26291	DWN: JJP 6-17-16 CHK: BAL 6-22-16 APPR: SHG 6-23-16
112	EC 19671	DWN: JJP 10-10-16 CHK: BAL 10-17-16 APPR: MM 10-18-16
113	601000000410	DWN: JJP 1-24-18 CHK: BAL 1-24-18 APPR: DAM 1-24-18
114	6EQVENG28642	DWN: JJP 4-23-19 CHK: 6000000531205 APPR: 6000000268878
115	6EQVENG26998 6EQVENG27005	DWN: JJP 4-24-19 CHK: 6000000531610 APPR: 6000000519282
116	601000000697	DWN: JJP 5-13-19 CHK: 6000000541592 APPR: 6000000541593
117	601000001727	DWN: JJP 10-15-19 CHK: 6000000612539 APPR: 6000000599227

SERVICE WATER PUMPS
(BY JOB 6453)

TURBINE LUBE OIL COOLERS

REACTOR FEED PUMPS

REACTOR BLDG C.W. HEAT EXCHANGERS

NOTES:
1. BRASS OR BRONZE TRIM.
2. ORANGE LINES ARE INTERNAL FLOODING RELATED.
3. SS VALVE 6EQVENG27005.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

This map/document is 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.

M-110

MONTI CAD DWG 'AT'

P&ID
SERVICE WATER SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT

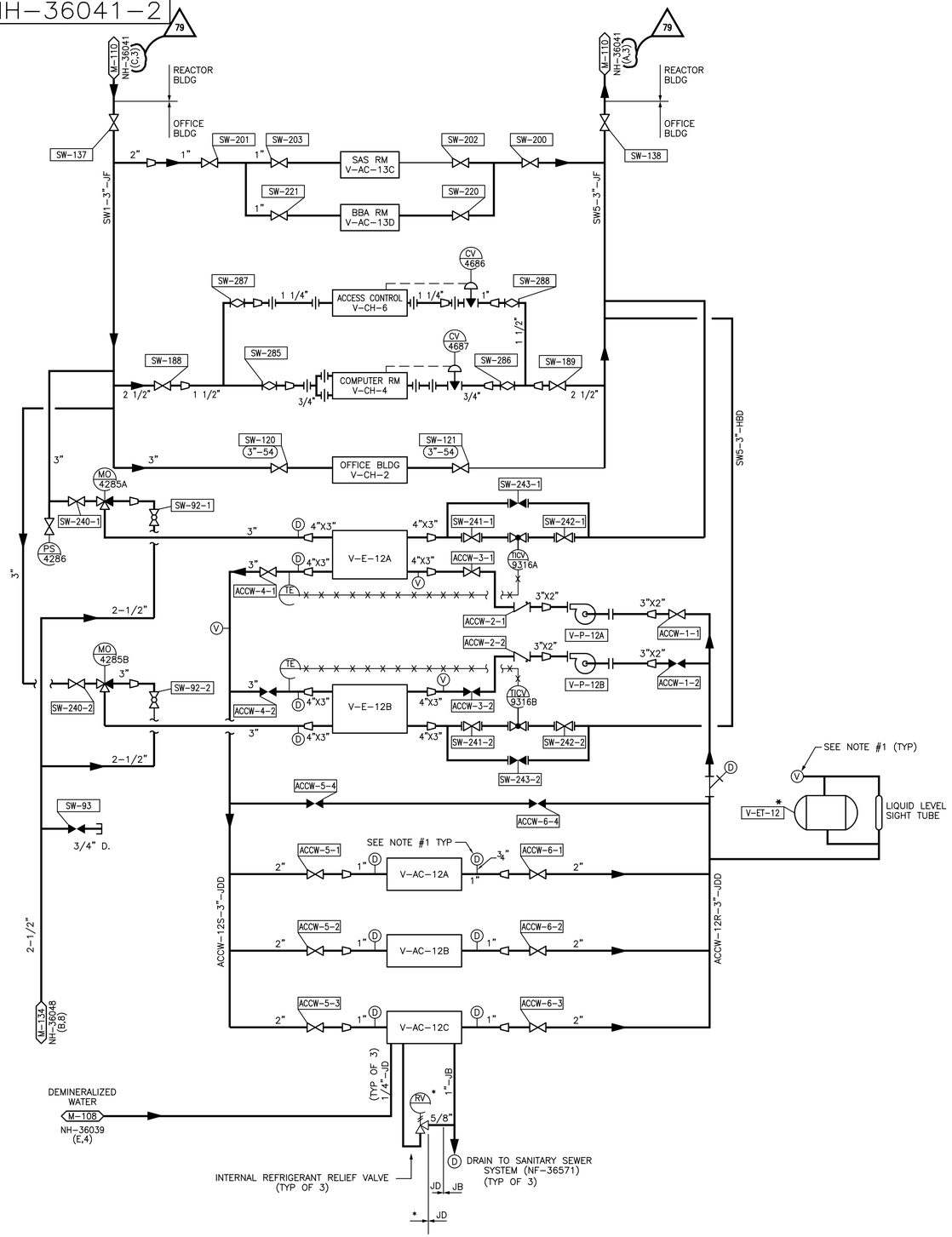
SCALE: NONE

REV 117

Xcel Energy
NORTHERN STATES POWER COMPANY

NH-36041

NH-36041-2



REVISIONS
76 EC 11951 A/R 01121715 DWN: JJP 3-4-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
77 EC 15913 DWN: JJP 3-30-10 CHK: BAL 3-31-10 APPR: CER 4-23-10
78 EC 22433 DWN: JJP 8-20-13 CHK: BAL 8-20-13 APPR: NEO 8-21-13
79 EC 26170 DWN: JJP 10-6-15 CHK: SDP 10-6-15 APPR: NTM 10-6-15

NOTES:

1. ALL VENTS AND DRAINS ARE FITTED WITH 3/4" HOSE BIBB VALVES.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-110-2
MONTI CAD DWG " D "

SERVICE WATER SYSTEM
P & ID
SHT 2 OF 2

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy™ NORTHERN STATES POWER COMPANY

SCALE: NONE
REV 79

NH-36041-2

NH-36042

TO NON-REGENERATIVE HEAT EXCHANGER E-202 (12-3)

M-111-1 NH-36042-2 (D,7) — CW4-8"-HF

CW2-4"-HF — 4"-29 RBCC-33 — M-128 NH-36254 (C,3) — ORW

RBCC-35 1"-19 — RBCC-48 1"-19 — dPI 12-119

TI 1420 — MO 3501 2218 — CO4 HS 3501 — 4"-142 — CW5-4"-HF

M-128 NH-36254 (D,3) — SX 1418 PX

M-108 NH-36039 (E,5) — 1 1/2"-176Y DM-111 — 1 1/2"-HJ

CO6 4 H L — LS 1390 — 4" — D24-3"HF

T-3 — LG 1391 — 1700 GAL

RBCC-71-1 — CW9-1"-HF — 1"-HF — RBCC-26 1"-19 — ORW

REACTOR BLDG COOLING WATER SURGE TANK

RBCC-24-2 3/4"-130 — RBCC-46-2 3/4"-130 — CW2-6"-HF — 3/4" HF — ORW

6"-29 RBCC-22-2 — 8" X 6" — TOP — M-135 NH-36256 (A,4) — 6"-142 RBCC-25-2

RBCC-23-2 1"-19 — TI 1417 — SX 1415 PX — RBCC-45-2 1"-19 — ORW

E-6B / 12

FUEL POOL COOLING WATER HEAT EXCHANGERS (HALF CAPACITY)

3/4"-130 RBCC-43 — 8" — CW5-3"-HF — 3/4"-130 RBCC-47

TO TR-1720 M-111-1 NH-36042-2 (C,3) — T RBC100 — TE 1720 A

RBCC-24-1 3/4"-130 — RBCC-46-1 3/4"-130 — 3/4" HF — ORW

1"-19 RBCC-44 — 6"-29 RBCC-22-1 — 8" X 6" — BOTTOM — M-135 NH-36256 (B,4) — 6"-142 RBCC-25-1

M-111-1 NH-36042-2 (D,3) — CW2-6"-HF — RBCC-23-1 1"-19 — TI 1416 — SX 1414 PX — RBCC-45-1 1"-19 — ORW

E-6A / 11

10" — CW5-8"-HF — RBCC-58 1"-19 — 1"-HF — ORW

1 1/2"-19 RBCC-42 — RBCC-39 1 1/2"-19

RBCC-40 — RBCC-97-1 — RBCC-98-1 — RBCC-41 — SC-3020

RBCC-97-2 — RBCC-98-2 — SC-3022

RBCC-97-3 — RBCC-98-3 — SC-3011

1 1/2" HF — 3/4" — 1 1/2" HF

RBCC-93 — RBCC-94 — V-CH-18 — RBCC-95 — RBCC-96

RBCC-99-1 — RBCC-100-1 — SC-3018

RBCC-99-2 — RBCC-100-2 — SC-3016

RBCC-99-3 — RBCC-100-3 — SC-3014

RBCC-99-4 — RBCC-100-4 — SC-4288

3/4" TYP — 1/2" TYP

REACTOR BLDG SAMPLE STATION

CW2-1 1/2"-HF — RBCC-31-1 2"-19 — RBCC-59-1 — CW2-2"-HF

CW2-1 1/2"-HF — RBCC-31-2 2"-19 — RBCC-59-2 — RBCC-61

RBCC-60-1 — CW5-1 1/2"-HF — CW5-2"-HF — RBCC-32-1 1 1/2"-130

RBCC-60-2 — CW5-1 1/2"-HF — RBCC-32-2 1 1/2"-130 — RBCC-62

CRD-55-1 — FG 2347 — 3/4"-19 RBCC-29-1 — GEAR DRIVE COOLER CONTROL ROD DRIVE FEED PUMP P-201A (3-16A) — CRD-56-1 — 3/4"-130 RBCC-30-1

CRD-55-2 — FG 2348 — 3/4"-19 RBCC-29-2 — GEAR DRIVE COOLER CONTROL ROD DRIVE FEED PUMP P-201B (3-16B) — CRD-56-2 — 3/4"-130 RBCC-30-2

3/4" — 1" — 79

RBCC-109 — RBCC-27 — RBCC-107-3 — RBCC-108-3 — RBCC-111 — RBCC-28

SC-1114 — SC-1152 — SC-1150

RBCC-107-1 — RBCC-108-1 — RBCC-107-2 — RBCC-108-2

C213 SX 4293

CW5-1 1/2"-HF — CW5-2"-HF — CW5-12"-HF

SC-1114 HAS BEEN ABANDONED IN PLACE. THE CONNECTING PIPES HAVE BEEN CUT AND CAPPED.

TURBINE BLDG SAMPLE STATION

RBCC-103 — RBCC-104 — V-CH-19 — RBCC-101 — RBCC-102

RBCC-105-1 — RBCC-106-1 — SC-4287

RBCC-105-2 — RBCC-106-2 — SC-4289

RBCC-105-3 — RBCC-106-3 — SC-4290

3/4" TYP — 1/2" TYP

PI 1700 — TI 1400

3/4"-130 RBCC-8 — 3/4"-130 RBCC-7 — VENT — ORW — T-4 — 3/4"-19 RBCC-6 — RBCC-5 3/4"-19 — ORW

CHEMICAL FEEDER

RBCC-113-1 — RBCC-112-1 — 12"-29 RBCC-1-1

1"-19 RBCC-65-1 — RBCC-64-1 — RBCC-37-1 — RBCC-37-2 — RBCC-64-2 — RBCC-65-2 1"-19

RBCC-1-2 12"-29 — RBCC-113-2 — RBCC-112-2

CW1-10"-HF — 10"-29 RBCC-4-1 — 10"-237 RBCC-3-1 — PI 1396 — RBCC-114-1

RBCC-67-3 — RBCC-67-1 — RBCC-66-1 1"-19 — RBCC-38-1 — 1"-HF — RBCC-38-2 — RBCC-67-2 — RBCC-67-4 — RBCC-66-2 1"-19

C06 HS — VENT — ORW — RBCC-2-1 3/4"-130 — 3318 — P-6A

C06 HS — VENT — ORW — RBCC-2-2 3/4"-130 — 4218 — P-6B

PI 1397 — RBCC-114-2

RBCC-4-2 10"-29 — RBCC-3-2 10"-237 — CW1-10"-HF

REACTOR BLDG COOLING WATER PUMPS (FULL CAPACITY - 3000 GPM)

CW9-1"-HF — RBCC-71-2 — RBCC-71-3 — NH-96042 (C,5)

RBCC-69-4 — NH-96042 (C,5) — RBCC-69-5 — CW8-1"-HF

TO PAS SYSTEM COOLERS

3/4"-130 RBCC-11-1 — VENT — 3/4" HF — ORW — PX — SX 1408 — TI 1405 — M-110 NH-36041 (A,4) — 8"-29 RBCC-9-1 — 8"-142 RBCC-12-1 — CW2-8"-HF — RBCC-70-1 — RBCC-69-1 — RBCC-10-1 1"-19 — CW1-8"-HF — 1" HF — ORW

E-5A / 11

3/4"-130 RBCC-11-2 — VENT — 3/4" HF — ORW — PX — SX 1409 — TI 1406 — M-110 NH-36041 (A,4) — 8"-29 RBCC-9-2 — 8"-142 RBCC-12-2 — CW2-8"-HF — RBCC-70-2 — RBCC-69-2 — RBCC-10-2 1"-19 — CW1-8"-HF — 1" HF — ORW

E-5B / 12

3/4"-130 RBCC-11-3 — VENT — 3/4" HF — ORW — PX — SX 1410 — TI 1407 — M-110 NH-36041 (A,4) — 8"-29 RBCC-9-3 — 8"-142 RBCC-12-3 — CW2-8"-HF — RBCC-70-3 — RBCC-69-3 — RBCC-10-3 1"-19 — CW1-8"-HF — 1" HF — ORW

E-5C / 13

REACTOR BLDG COOLING WATER HEAT EXCHANGERS

FI 4145 — FE 4145 — 10"

RW 17-302 — RE 17-334 — RT 17-335 — C10 RM 17-352 — R PRM108 — CO4 A H L — CO2 RR 4902

SX 1401 PX

PT 1399 — C06 E/S C06B-5 — C06 PS 1399 — C06 PI 1399 — C06 A C L

PS 1398 — PI 7434 — STANDBY PUMP START

REVISIONS

076	EC 991 A/R 01011926 DWN: DN 2-28-06 CHK: BAL 2-28-06 APPR: JD 3-1-06
77	EC 11951 A/R 01121715 DWN: JJP 3-4-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78	EC 12389 A/R 01129353 DWN: JJP 6-5-08 CHK: BAL 6-5-08 APPR: GEH 6-17-08
79	EC 25632 DWN: JJP 7-20-15 CHK: BAL 7-21-15 APPR: JPC 9-8-15

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-111

MONTI CAD DWG 'S'

P&ID

REACTOR BUILDING COOLING WATER SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy — NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 79

NH-36042

NH-36042-2

REVISIONS
76 EC11951 A/R 01121715 DWN: JJP 3-4-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
77 EC19671 DWN: JJP 10-10-16 CHK: BAL 10-17-16 APPR: MM 10-18-16

M-111 NH-36042 (D,5)

RBCC-88-2 RBCC-89-2 RBCC-90-2 CW6-1"-HF

SEE RHR PUMP VENT & DRAIN DETAIL (TYP) M-121 NH-36247 (E,2)

TO RHR PUMP P-202A (10-3A) 11

TO RHR PUMP P-202C (10-3C) 13

TO RHR PUMP P-202B (10-3B) 12

TO RHR PUMP P-202D (10-3D) 14

RHR ROOM WALL (NOTE 1)

3/4"-130 RBCC-14-1 FG 2349
3/4"-130 RBCC-14-3 FG 2351
3/4"-130 RBCC-14-2 FG 2350
3/4"-130 RBCC-14-4 FG 2352

3/4"-19 RBCC-13-1
3/4"-19 RBCC-13-3
3/4"-19 RBCC-13-2
3/4"-19 RBCC-13-4

77

CW7-1"-HF

M-111 NH-36042 (C,8)

RBCC-90-1

RBCC-87-2 RBCC-86-2 RBCC-79 MO 4230 C06 HS 4230
RBCC-85-2 RBCC-84-2 MO 1426 C06 HS 1426 MO-8"-N29AB
RBCC-83-2 RBCC-82-2
X-24

RBCC-87-1 RBCC-86-1 RBCC-78 MO 4229 C06 HS 4229
RBCC-85-1 RBCC-84-1 8"-N237AB RBCC-15
RBCC-92 RBCC-91 RBCC-83-1 RBCC-82-1
X-23

RV 1725 1" 3/4" ORW 1/2"-130 RBCC-57-2 CW4-4"-HF
TE 1720E TR-1720 (C,3) TE 1720J
DRYWELL COOLER V-CC-2
RBCC-56-2 RBCC-55-2 RBCC-54-2 2 1/2"-340 TYP
3/4"-65 RBCC-53-2 ORW
1/2"-130 RBCC-52-2 CW3-4"-HF
C25 HS 1428 MO 1428 4344 MO-4"-29

RBCC-81-2 RBCC-19-2 4"-142 RBCC-18-2 4"-237 RBCC-80-2

RBCC-81-1 RBCC-80-1

C06 A H
C25 TR 1720

RBCC-77

RV 1726 1" 3/4" ORW 1/2"-130 RBCC-57-3 CW4-4"-HF
TE 1720F TR-1720 (C,3) TE 1720K
DRYWELL COOLER V-CC-3
RBCC-56-3 RBCC-55-3 RBCC-54-3 2 1/2"-340 TYP
3/4"-65 RBCC-57-7 ORW
3/4"-65 RBCC-53-3 ORW
1/2"-130 RBCC-52-3 CW3-4"-HF
C25 HS 1429 MO 1429 3345 MO-4"-29

RBCC-19-3 4"-142 RBCC-18-3 4"-237

RBCC-76 TE 1720B

CW4-8"-HF

CW3-8"-HF

2"-19 RBCC-20-2

CW4-2"-HF TO RECIRC. PUMP P-200B M-117 NH-36243-1 (B,6) 12 CW3-2"-HF

RBCC-21-2 2"-130 FS 2-2-23B

RV 1723 1" 3/4" ORW TE 1720C TR-1720 (C,3)

E-25 M-138 NH-36044 (E,3)

DRYWELL EQUIP DRAIN SUMP HEAT EXCHANGER

2"-19 RBCC-16 RBCC-50

RBCC-51 RBCC-17 2"-130

RV 1727 1" 3/4" ORW 1/2"-130 RBCC-57-4 CW4-4"-HF
TE 1720G TR-1720 (C,3) TE 1720L
DRYWELL COOLER V-CC-4
RBCC-56-4 RBCC-55-4 RBCC-54-4 2 1/2"-340 TYP
3/4"-65 RBCC-57-8 ORW
3/4"-65 RBCC-53-4 ORW
1/2"-130 RBCC-52-4 CW3-4"-HF
C25 HS 1430 MO 1430 4345 MO-4"-29

RBCC-19-4 4"-142 RBCC-18-4 4"-237

2"-19 RBCC-20-1

CW4-2"-HF TO RECIRC. PUMP P-200A M-117 NH-36243-1 (B,2) 12 CW3-2"-HF

RBCC-21-1 2"-130 FS 2-2-23A

RV 1724 1" 3/4" ORW 1/2"-130 RBCC-57-1 CW4-4"-HF
TE 1720D TR-1720 (C,3) TE 1720H
DRYWELL COOLER V-CC-1
RBCC-56-1 RBCC-55-1 RBCC-54-1 2 1/2"-340 TYP
3/4"-65 RBCC-57-5 ORW
3/4"-65 RBCC-53-1 ORW
1/2"-130 RBCC-52-1 CW3-4"-HF
C25 HS 1427 MO 1427 3344 MO-4"-29

RBCC-19-1 4"-142 RBCC-18-1 4"-237

77 NOTES:
1. INTERNAL FLOODING RELATED.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-111-1
MONTI CAD DWG " A "

P&ID REACTOR BUILDING COOLING WATER SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy™ NORTHERN STATES POWER COMPANY

SCALE: NONE REV 77

NH-36042-2

NH-36043

REVISIONS

78 EC828
DWN: JJP 3-19-07
CHK: BAL 3-20-07
APPR: JCG 3-26-07

79 EC11951
A/R 01121715
DWN: JJP 3-4-08
CHK: BJR 3-11-08
APPR: RMG 3-12-08

80 EC12470
DWN: JJP 1-22-10
CHK: BAL 1-22-10
APPR: JCG 1-22-10

81 EC14882
DWN: JJP 1-22-10
CHK: DDW 1-25-10
APPR: AJD 1-25-10

82 EC15644
DWN: JJP 3-1-11
CHK: BAL 3-3-11
APPR: SMA 3-4-11

83 EC18881,21417
DWN: JJP 6-7-13
CHK: GMP 6-9-13
APPR: NTM 6-9-13

84 EC23394
DWN: JJP 2-13-14
CHK: BAL 2-17-14
APPR: MLW 2-18-14

85 EC27048
DWN: JJP 5-10-16
CHK: BAL 5-11-16
APPR: JCG 5-12-16

86 EC21091
DWN: JJP 5-18-16
CHK: BAL 5-18-16
APPR: JCG 5-18-16

87 EC27714
DWN: JJP 3-27-17
CHK: AJR 3-27-17
APPR: JCG 3-28-17

88 6DOCEDI27833
DWN: JJP 8-3-17
CHK: BAL 8-3-17
APPR: RAH 8-3-17

ACCESS CONTROL DRAIN
CH11-1 1 1/2"-HK
TO CHEMICAL WASTE TANK M-140 NH-36046 (C,6)
DRW-2 1 1/2"-76Y
DRW-1 1 1/2"-276Y
RHR PUMP VENT
CORE SPRAY PUMP SUCTION/SEAL VENT TK.
RCIC PUMP LEAKAGE TK.
FLOOR DRAINS
RHR HEAT EXCHANGER VENTS
88
COND. STORAGE OVERFLOW DRAIN M-138 NH-36044 (D,5)
OFF-GAS STACK DRAIN
2"-HC
D6-3"-HC
RWN7-2"-HC
DRW-141
1/2"
1"
1 1/2"
(B,1)
6"
FUEL POOL HEAT EXCHANGER DRAINS (COOLING SIDE)
REACTOR BUILDING COOLING WATER HEAT EXCHANGER DRAINS
RBCW PUMP LEAKAGE
CONTROL ROD PIPING LEAKS
FLOOR DRAINS
PIPING & EQUIPMENT MAINTENANCE VENTS
WEST CRD SCRAM DISCHARGE VOLUME DRAIN LINE M-119 NH-36245 (C,3)
4"
RWN19-3"-HC
LEAK RATE CHANGE C04 A
HIGH LEAK RATE C04 A
C41 TIMER
C41 TIMER
PUMP TRIP
X-18
DRW-93
DRW-94
DRW-95
PSD 6047
RWN6-2"-HC
C04 A C
C04 L O C
F.C.
AO-2"-19
AO 2541A
AO 2541B
DRW-91 1"-19
N.E.
SV 2541A
SV 2541B
A.C.
A/S M-131 NH-36049-14 (D,5)
REACTOR PROTECTION SYSTEM (CLOSE ON DRYWELL PRESSURE OR LOW RX WATER LEVEL)
C04 HS 16A-S18
PC1139
M-131 NH-36049-14 (A,5)
DRW-6-1 2"-19
DRW-6-2 2"-19
DRW-5-1 2"-223
DRW-5-2 2"-223
DRW-8-1 3"-29
DRW-8-2 3"-29
DRW-7-1 3"-237
DRW-7-2 3"-237
DRW-11-1 2"-19
DRW-11-2 2"-19
DRW-10-1 2"-223
DRW-10-2 2"-223
C84 HS 2530
C84 HS 2526
C84 HS 2529
C84 HS 2532
C84 HS 2531
C84 HS 20-1B
C04 HS 20-1A
LS 3057
LS 2526
LS 3059
LI 2550
LS 2530
LS 2529
FIC 2550
LS 3065
LS 2532
LS 2531
LI 2540
FIC 2540
LS 3060
LS 2534
LS 2533
LE 3000
NOTE 2 VENT 4"-HC
VENT 4"-HK
P-84 25 GPM
50 GAL
LAB DRAIN SUMP S-35
1421
11
12
3306
4303
P-25A
P-25B
100 GPM EACH
AUTO: 130 GAL STDBY: 170 GAL
195 GAL
REACTOR BLDG FLOOR DRAIN SUMP S-37
RWN48-4"-MR
FROM EQUIP. DRAIN SUMP S-42 OVERFLOW M-138 NH-36044 (C,5)
AUTO VOL 598 GAL STDBY VOL 670 GAL
1310 GAL
1109
4109
P-57A
P-57B
REACTOR BLDG FLOOR DRAIN TANK T-55
RWN12-4"-HC
2"
DRW-9 2"-19
CRW
CRD-93
1 1/2"
AUTO: 186 GAL STBY: 229 GAL
1110
4110
P-24A
P-24B
50 GPM EACH
DRYWELL FLOOR DRAIN SUMP S-38
DRYWELL COOLER DRAINS
FLOOR DRAINS
CONTROL ROD DRIVE LEAKAGE & DRAINS
CLOSED COOLING WATER PIPING DRAINS
PIPING & EQUIPMENT MAINTENANCE VENTS
LT 7407
LR 7409
E/S 7409
VENT 4"-HC
C-246
TURB. BLDG. RX. BLDG.
BY JOB NO. 6453
LS 4265
SAS
LS 4266
P-93
80 GAL
LAB. DRAIN
CHEM. LAB ADDITION DRAIN SUMP S-93
3"-HK
VENT 3"
LS 3251
MACHINE SHOP DRAIN TANK T-103 200 GAL
3"-HS
2"-76Y DRW-73
2"-76Y DRW-74
RFP. SEAL DRAIN TK. OVERFLOW
ORW
1 1/2"-76Y DRW-78
1 1/2" HK
TO CHEMICAL WASTE TANK M-140 NH-36046 (C,6)
1 1/2"-76Y DRW-77
1 1/2" HK
TO LAUNDRY DRAIN TANK M-140 NH-36046 (C,3)
1 1/2"-76Y DRW-76
1 1/2" HK
1 1/2"-HC
HK HC
"HOT" LAB FLOOR DRAINS LAUNDRY DRAINS
DRW-4-1 2"-19
DRW-4-2 2"-19
DRW-3-1 2"-223
DRW-3-2 2"-223
C84 HS 2528
C84 HS 2527
LS 3058
LS 2528
LS 2527
1420
4131
P-82A
P-82B
25 GPM EACH
175 GAL
LAUNDRY DRAIN SUMP S-36
MASK DECON. RM WASHER & SINK
CH12-2"-HC
C84A FQ 2543
C84 LIM 2543
C84 FCp 2543
C84 FT 2543
FE 2543
E/S 84A-2
F PCT107
TO FR-2544 M-138 NH-36044 (C,2)
SX 2542
LOCAL
1 1/2"
(E,3)
RWN19-3"-HC
1 1/2"-HC
RWN9-2"-HC
RWN8-3"-HC
RWN18-2"-HC
RWN 19-4"-HC
RWN6-2"-HC
FLOOR DRAIN RADWASTE DRUM STORAGE AREA
FLOOR DRAINS
FLOOR DRAIN COLLECTION TK. PUMP LEAKAGE
WASTE COLLECTOR TK. DRAIN & OVERFLOW
PRECOAT TK. DRAINS & OVERFLOWS
CHEMICAL WASTE PUMP LEAKAGE
CHEMICAL WASTE TK. DRAIN & OVERFLOW
WASTE SAMPLE TK. DRAIN & OVERFLOW
FLOOR DRAIN SAMPLE PUMP LEAKAGE
WASTE SURGE TK. DRAIN & OVERFLOW
FILTER AID TK. DRAINS & OVERFLOWS
FLOOR DRAIN SAMPLE TK. DRAIN & OVERFLOW
LAUNDRY DRAIN TK. DRAIN & OVERFLOW
PRECOAT & FILTER AID PUMP LEAKAGE
LAUNDRY DRAIN FILTER DRAIN
WASTE SURGE PUMP LEAKAGE
WASTE SAMPLE PUMP LEAKAGE
PIPING & EQUIPMENT MAINTENANCE VENTS
DRW-13-1 2"-19
DRW-13-2 2"-19
DRW-12-1 2"-223
DRW-12-2 2"-223
C84 HS 2536
C84 HS 2535
LS 3062
LS 2536
LS 2535
1114
4114
P-27A
P-27B
VENT 4"-HC
AUTO: 366 GAL STD BY: 419 GAL
50 GPM EACH
RADWASTE BLDG FLOOR DRAIN SUMP S-39
C84 LS 7863A
C84 LS 7863B
TRUCK SHIPPING AREA SUMP S-113A
NEW RADWASTE SHIPPING BUILDING SUMP (SOUTH) S-113B
NEW RADWASTE SHIPPING BUILDING SUMP (NORTH) S-113C
DRW-121 4"-125#
947'-0" RADWASTE TANK ROOM FLOOR DRAINS.
FLOOR DRAINS
PRECOAT & FILTER AID TK. DRAIN & OVERFLOW
PRECOAT & FILTER AID PUMP LEAKAGES
PIPING & EQUIPMENT MAINTENANCE VENTS
CONDENSATE DRIP TK. DRAIN & OVERFLOW
HS 3457
LS 3457
M-131 NH-36049-11 (C-7)
CRW-121
CRW-120
P-53 15 GPM
12 GAL
CONDENSATE PUMP AREA SUMP S-53
DRW-15-1 3"-29
DRW-15-2 3"-29
DRW-14-1 3"-237
DRW-14-2 3"-237
C84 HS 2538
C84 HS 2537
LS 3063
LS 2538
LS 2537
3103
2103
P-26A
P-26B
NOTE 2 VENT 4"-HC
1120 GAL
100 GPM EACH
TURBINE BLDG FLOOR DRAIN SUMP S-40
RWN 48-4"-MR
FROM EQUIPMENT DRAIN SUMP S-44 OVERFLOW M-138 NH-36044 (A,5)
SPENT RESIN TANK DRAIN & OVERFLOW
CENTRIFUGE EFFLUENT TANK DRAIN & OVERFLOW
CONDENSATE PHASE SEPARATOR DRAIN & OVERFLOW
CLEANUP PHASE SEPARATOR DRAIN & OVERFLOW
CENTRIFUGE WASHOUT
HOPPER WASHOUT
FLOOR DRAINS
RADWASTE SHIPPING LINE FLUSH M-141-2 NH-36047-2 (B,7)
M-141 NH-36047-1 (B,2)
M-141 NH-36047-1 (D,2)
1 1/4"-HE
RWN60-4"-HC
RWN52-6"-HC
DRW-17 2"-19
DRW-16 2"-223
DRW-117
C84 HS 2539
LS 3064
LS 2539
4146
P-59 50 GPM
500 GAL
CONVEYOR FLOOR DRAIN SUMP S-41
RWN45-6"-MR
TO WASTE SLUDGE TANK M-141 NH-36047-1 (E,5)
TO FLOOR DRAIN COLLECTOR TANK M-140 NH-36046 (E,6)

NOTE:
1. SUMP CAPACITIES GIVEN ARE FOR LIVE STORAGE BETWEEN MIN. SUMP WATER LEVEL AND PUMP START.
2. VENT PIPING ROUTED TO ROOM H&V EXHAUST DUCTWORK, WITH FLEXIBLE DUCTS USED FOR SUMPS.

COLOR LEGEND
ASME CLASS 1/QUALITY GROUP A
ASME CLASS 2/QUALITY GROUP B
ASME CLASS 3/QUALITY GROUP C
QUALITY GROUP D
SAFETY RELATED MECHANICAL
SAFETY RELATED ELECTRICAL
SPECIAL CONCERNS ITEM

M-137
MONTI CAD DWG 'R'

P&ID – OPEN (DIRTY)
RADWASTE SUMP SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE
REV 88

NH-36043

NH-36044

CONDENSATE STORAGE TANKS OVERFLOW
M-108 NH-36039 (C,4)

CD7A-12"-JB

CD7B-12"-JB

VENT V53-6"-JB

C84 A H LS 2545

12" OVERFLOW CD8-12"-JB

CONDENSATE STORAGE TANKS DRAINS
M-108 NH-36039 (B,4)

CD7C-3"-JB

CD7D-3"-JB

CONDENSATE STORAGE TANK OVERFLOW TANK T-67
500 GAL.

TO BASIN

TO BASIN

CRW-3 2"-19

CRW-1 2"-130

2"-19 CRW-22

CRW-2 2"-223

TO REACTOR BLDG. FLOOR DRAIN SUMP M-137 NH-36043 (E,5)

2"-HC

RWN65-2"-HC

C84 A H HS 2547

C84 A H * LS 3070 LOCAL LI 2551

2"-19 CRW-21

* H LS 2547 L

NOTE 4 VENT 4"-HC

M-131 NH-36049-14 (A,5) FIC 2551

4140 P-21 50 GPM

88 135 GAL.

REACTOR BLDG. EQUIPMENT DRAIN SUMP S-42

RWN46-4"-MR

OVERFLOW TO REACTOR BLDG. FLOOR DRAIN SUMP S-37 M-137 NH-36043 (D,4)

VALVE STEM LEAK-OFFS. (IF REQUIRED)
RHR HEAT EXCHANGER DRAINS (PROCESS SIDE ONLY)
HPCI GLAND SEAL CONDENSER DRAIN
RCIC GLAND SEAL CONDENSER DRAIN
RHR PUMP DRAINS AND SEAL LEAKAGE
CORE SPRAY PUMP DRAINS AND SHAFT SEAL LEAKAGE

EAST CRD SCRAM DISCHARGE VOLUME DRAIN LINE
M-119 NH-36245 (C,2)

4"

RWN3-2"-HC

VALVE STEM LEAK-OFFS (IF REQUIRED)
CLEAN-UP SLUDGE PUMP LEAKAGE
CONDENSATE SLUDGE PUMP LEAKAGE
WASTE COLLECTOR PUMP LEAKAGE
CLEAN-UP PUMP LEAKAGE
FUEL POOL PUMP LEAKAGE
FUEL POOL HEAT EXCHANGER DRAINS (PROCESS SIDE ONLY)
CLEAN-UP REGEN. & NON-REGEN. HEAT EXCHANGER DRAINS
PIPING MAINTENANCE DRAINS
CONDENSATE SERVICE PUMP LEAKAGE

2" SEE NOTE 2

CRW-5-1 3"-29

CRW-5-2 3"-29

CRW-4-1 3"-237

CRW-4-2 3"-237

C84 HS 2549

C84 HS 2548

LOCAL LI 2558

FIC 2558

M-131 NH-36049-14 (A,5)

* H LS 2548 L

* H LS 2549 L

* H LS 2547 L

C84 A H LS 3071

4"

1 1/2"

CRD-94

11 1117 P-58A

12 4118 P-58B

100 GPM EACH

AUTO: 526 GAL
STBY: 598 GAL

NOTE 4 VENT 4"-HC

RWN13-4"-HC

2"

CRW-6 2"-19

REACTOR BLDG. EQUIPMENT DRAIN TANK T-56

RWN20-3"-HC

3" SEE NOTE 2

AO-3"-463 FOR FUTURE USE SEE NOTE 2

F.O.

AO 2559

M-131 NH-36049-14 (A,8)

REACTOR BUILDING COOLING WATER
M-111-1 NH-36042-2 (B,5)

CW4-2"-HF

CW3-2"-HF

1" VENT CRW-9 (1"-130)

E-25

CRW-10 (1"-19)

ORW

2"-HC

DRYWELL EQUIP. DRAIN SUMP HEAT EXCH.

VALVE STEM LEAK-OFFS
REACTOR RECIRC. PUMP LEAKAGE
REACTOR RECIRC. PIPING MAINTENANCE DRAINS

REACTOR WELL BULKHEAD AND BELLOWS DRAINS
REACTOR VESSEL FLANGE LEAK-OFF

LEAK RATE CHANGE C04 A

C41 TIMER

C41 TIMER

LEAK RATE HIGH C04 A

C04 A H C04 TIS 2578 C-19 TT 2578 TE 2578

N.D. SV 2560

M-131 A/S NH-36049-12 (B,4)

AO 2560A PSD 6048 RWN2-2"-HC

X-19

AO 2560B

CRW-140 CRW-111

C84 O L C F.O.

F.C. AO-2"-462

AO-2"-462

2"-HC

CRW-112 CRW-113

F.C. F.C.

C04 O L C

AO-2"-19

AO 2561A AO 2561B

CRW-104 (1"-19)

C04 O L C

C

PUMP TRIP

N.E. SV 2561A N.E. SV 2561B

C04 A C

A.C. A.C.

A/S M-131 NH-36049-14 (C,5)

C84 HS 2560

C04 HS 16A-S19

REACTOR PROTECTION SYSTEM (CLOSE ON HIGH DRYWELL PRESSURE OR LOW RX WATER LEVEL)

CRW-8-1 2"-19

CRW-8-2 2"-19

CRW-7-1 2"-223

CRW-7-2 2"-223

C04 HS 20-5B

C04 HS 20-5A

C04 C84 L

C04 A H LS 3072 C-246

LE 3001

LS 2551 L

LS 2550 L

11 1111 P-20A

12 4111 P-20B

50 GPM EACH

AUTO: 186 GAL
STBY: 229 GAL

L PCT138

LT 7408

VENT 4"-HC

C04 E/S 7409

C04 LR 7409

PUMP START

C04 A H TIS 2560

TE 2560 TT 2560 C-19

DRYWELL EQUIPMENT DRAIN SUMP S-43

C84A FO 2544

C84 E/S C84A-1

F PCT108 2 PEN

C04 FR 2544

LIM 2544 FCP 2544 FT 2544 FE 2544

SX 2571 LOCAL

CRW-138

RWN60-1 1/2"-HJ

HJ HC

CRW-137

RWN20-3"-HC

FROM FT-2543 M-137 NH-36043 (B,1)

RWN20-4"-HC

TO WASTE COLLECTOR TANK T-24 M-139 NH-36045 (E,6)

N.O. SEE NOTE 3

OFF-GAS DRAINS (LOOP SEAL)
TURBINE BLDG SAMPLE SYSTEM M-144 NH-36829 (C,3)
REACTOR BLDG SAMPLE SYSTEM M-185 NH-36908 (A,4)

PIPING MAINTENANCE DRAINS
MOISTURE SEPARATOR DRAIN
CONDENSATE PUMP LEAKAGE
FEEDWATER HEATER DRAINS
FEEDWATER PUMP LEAKAGE
VACUUM PUMP WATER SEPARATOR DRAIN
VACUUM PUMP HEAT EXCHANGER DRAIN
CONDENSATE RESIN RECEIVER TK. DRAIN & OVERFLOW
CONDENSATE RESIN TRANSFER PUMP LEAKAGE

RWN14-2"-HC

CRW-15 2"-19

CRW-14 2"-223

M-141 NH-36047-1 (A,5)

C84 A H LS 3074

C84 HS 2552 * H LS 2552 L

RWN43-8"-HC 8"

NOTE 4 VENT 4"-HC

M-131 NH-36049-11 (C,7)

SEE DCM75-64 FOR LOOP SEAL DETAILS

3109 P-51 50 GPM

183 GAL.

TURBINE BLDG. EQUIPMENT DRAIN SUMP S-44

RWN48-4"-MR

OVERFLOW TO TURBINE BLDG. FLOOR DRAIN SUMP M-137 NH-36043 (A,3)

CRW-139 1"-HJ

RWN60-1 1/2"-HJ

1 1/2"-HJ

CRW-17-1 3"-29

CRW-17-2 3"-29

CRW-16-1 3"-237

CRW-16-2 3"-237

C84 HS 2554

C84 HS 2553

C84 A H LS 3075 4"

* H LS 2553 L

* H LS 2554 L

LOCAL LI 2557

FIC 2557

VENT 3"-HC

11 3118 P-23A

12 2118 P-23B

100 GPM EACH

730 GAL. NOTE 5

2"-HC

RWN47-4"-HC

CRW-115

CRW-18 2"-19

CONDENSATE DRIP TANK T-22
(TURBINE BLDG. EQUIPMENT DRAIN TANK)

ORW

RWN22-3"-HC

TO CONDENSER M-105 NH-36036 (D,3)

CE 2562 CIT 2562 CS 2562 HS 2562

C84 CI 2562

ORW REACTOR BLDG. FLOOR DRAIN SUMP

AO-3"-463

F.O. RWN5-3"-HC

C84 O L C

PS 2563A PS 2563B

N.E. SV 2562B AO 2562B

AO-3"-463

N.E. SV 2563 N.E. SV 2562A A/S M-131 NH-36049-11 (B,6)

F.C. AO 2562A

NW1-4"-JB

NW2-1 3"-54 NW2-2 3"-54

NW1-1 3"-255 NW1-2 3"-255

TO OIL INTERCEPTOR (SEE NF-36753 FOR SAMPLE SYSTEM)

C84 HS 2556 HS 2555

C84A A 7

C84 14 C04 A 7

* H LS 2555 L

* H LS 2556 L

11 3110 AUTO: P-52A

12 2110 P-52B

61 GAL 80 GPM EACH

NOTE 5

VENT 4"-JB

C10 RM 7992A RE 7992A

C10 RM 7992B RE 7992B

RR 4902 C02

R PRM110 R PRM111

TURBINE BUILDING NORMAL WASTE SUMP S-45
(NON-RADIOACTIVE)
(SEE NOTE ON M-137 ON SUMP CAPACITIES)

NOTES:

1. ALL LINES TO BE SEALED IN SUMP OR SUMP TANK.
2. CONNECTIONS ARE PROVIDED FOR THE ADDITION OF A SUMP COOLER SHOULD THE THERMAL INPUT TO THE SUMP REQUIRE COOLING.
3. CONNECTION AND SPECTACLE FLANGE PROVIDED TO PERMIT FLOW TO BE DIVERTED TO T-26 DURING MAINTENANCE.
4. VENT PIPING ROUTED TO ROOM H&V EXHAUST DUCTWORK, WITH FLEXIBLE DUCTS USED FOR SUMPS.
5. VOLUME BETWEEN AUTO PUMP START AND STOP.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

REVISIONS

76	EC 1097 DWN: JJP 7-31-06 CHK: BAL 8-1-06 APPR: JCG 8-3-06
77	EC 1084 DWN: JJP 1-11-07 CHK: BAL 1-11-07 APPR: JCG 1-15-07
78	EC 11951 A/R 01121715 DWN: JJP 3-4-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
79	EC 11006 DWN: JJP 5-4-11 CHK: WGN 5-4-11 APPR: BLS 5-4-11
80	EC 23394 DWN: JJP 2-13-14 CHK: BAL 2-17-14 APPR: MLW 2-18-14
81	EC 25914 DWN: JJP 7-20-15 CHK: BAL 7-21-15 APPR: JCG 7-22-15
82	EC 27048 DWN: JJP 5-10-16 CHK: BAL 5-11-16 APPR: JCG 5-12-16
83	EC 27711 DWN: JJP 10-28-16 CHK: BAL 11-1-16 APPR: JCG 11-1-16
84	EC 27715 DWN: JJP 1-12-17 CHK: BAL 1-17-17 APPR: SJH 1-18-17
85	EC 27714 DWN: JJP 3-27-17 CHK: AJR 3-27-17 APPR: JCG 3-28-17
86	6DOCEDI27833 DWN: JJP 8-3-17 CHK: BAL 8-3-17 APPR: RAH 8-3-17
87	6EQVENG25813 DWN: JJP 9-11-17 CHK: BAL 9-11-17 APPR: JCG 9-11-17
88	6EQVENG21961 DWN: JJP 6-11-19 CHK: 600000555074 APPR: 600000555049

M-138
MONTI CAD DWG 'X'

P&ID CLOSED (CLEAN) RADWASTE SUMP SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy® NORTHERN STATES POWER COMPANY

SCALE: NONE REV 88

NH-36044

NH-36045

WASTE COLLECTOR TANK T-24
1152 GAL/FT
10,000 GAL
*MIXING EDUCTOR

WASTE COLLECTOR FILTER T-25
(P.O. M-31)

WASTE COLLECTOR DEMINERALIZER T-65

WASTE COLLECTOR FILTER HOLDING PUMP P-35

WASTE COLLECTOR PUMP P-32
110 GPM

WASTE SURGE TANK T-23
10' X 25' DIA.
3672 GAL/FT
*MIXING EDUCTOR
35,000 GAL

WASTE SURGE PUMP P-31
110 GPM

WASTE PRECOAT TANK T-30
400 GAL
(P.O. M-16)

WASTE PRECOAT PUMP P-34
225 GPM

FUEL POOL RESIN FEED TANK T-81

WASTE FILTER AID TANK T-29
150 GAL

WASTE FILTER AID PUMP P-48

FLOOR DRAIN FILTER AID PUMP P-46

WASTE SAMPLE TANK T-31A
10,000 GAL
11
MIXING* EDUCTOR

WASTE SAMPLE PUMP P-36A
110 GPM
11

WASTE SAMPLE TANK T-31B
10,000 GAL
1152 GAL/FT
12
MIXING* EDUCTOR

WASTE SAMPLE PUMP P-36B
110 GPM
12

POLY INJECT. TANK T-70
50 GAL

P-143
POLYMER INJECTION PUMP

TYPICAL FOR FAI VALVES

TYPICAL FOR F.O. OR F.C. VALVES

NOTES:

1. CONTAINS STAINLESS REPLACEMENT TUBING. REFER TO MOD. 97Q040.
2. HS FURNISHED ON C96 WITH THOSE AO's MARKED *
3. STAINLESS 316 TRIM.
4. CRW-101-1 & 2 AND ASSOC. PIPING FITTINGS PER EC8206.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

REVISIONS

78	EC 11592 A/R 01094672 DWN: JJP 10-3-07 CHK: BAL 10-11-07 APPR: DZ 3-5-08
79	EC 11951 A/R 01121715 DWN: JJP 3-6-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
80	EC 12127 A/R 01113763 DWN: JJP 3-17-08 CHK: BAL 3-20-08 APPR: JCG 3-24-08
81	EC 12408 A/R 01117937 DWN: JJP 4-29-08 CHK: BAL 4-29-08 APPR: JCG 4-29-08
82	EC 9655 DWN: JJP 12-8-09 CHK: BAL 12-9-09 APPR: KEC 12-9-09
83	EC 12933 DWN: JJP 4-21-10 CHK: BAL 4-21-10 APPR: KEC 4-21-10
84	EC 20192,20195,20310 DWN: JJP 9-13-12 CHK: BAL 9-14-12 APPR: JCG/JLH 9-14-12
85	EC 19489 DWN: JJP 3-20-14 CHK: BAL 3-20-14 APPR: JCG 3-20-14
86	EC 28099 DWN: JJP 3-20-17 CHK: BAL 3-20-17 APPR: JCG 3-20-17
87	6MODWM027809 DWN: JJP 4-19-18 CHK: BAL 4-23-18 APPR: JCG 4-24-18
88	6MODD0016745 DWN: NJM 6-5-18 CHK: AJR 6-5-18 APPR: DJS 6-6-18

M-139
MONTI CAD DWG 'S'

P&ID
CLEAN RADWASTE SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE
REV 88

NH-36045

NH-36046

P&ID DIRTY RADWASTE SYSTEM

SHEET 1 OF 2

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy — NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 84

NH-36046

M-140

MONTI CAD DWG * P *

This map/document is 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.

REVISIONS

78	EC 11006 DWN: JJP 5-4-11 CHK: WGN 5-4-11 APPR: BLS 5-4-11
79	EC 19136 DWN: JJP 2-13-12 CHK: BAL 2-14-12 APPR: SAN 4-4-12
80	EC 23465 DWN: JJP 8-24-15 CHK: AJR 8-24-15 APPR: JRG 8-24-15
81	EC 21091 DWN: JJP 5-16-16 CHK: BAL 5-18-16 APPR: JCG 5-18-16
82	6MODWM027809 DWN: JJP 4-19-18 CHK: BAL 4-22-18 APPR: JCG 4-24-18
83	6MOD00016745 DWN: NJM 6-5-18 CHK: AJR 6-5-18 APPR: DJS 6-6-18
84	6MOD00016745 DWN: NJM 6-6-18 CHK: AJR 6-7-18 APPR: DJS 6-7-18

NOTES:

1. CONTAINS STAINLESS REPLACEMENT TUBING. REFER TO MOD. 97Q040.
2. STAINLESS 316 TRIM.
3. LAUNDRY DRAIN TANKS PUMPS, FILTER, AND ASSOCIATED EQUIPMENT INACTIVE.
4. SW FITTINGS ON 4" CROSS-TIE CH27-4"-HC PER EC21091.

COLOR LEGEND

- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

MACHINE SHOP DRAIN — M-137 NH-36043 (B,1)
TURBINE BLDG FLOOR DRAIN SUMP — M-137 NH-36043 (B,1)
RADWASTE BLDG FLOOR DRAIN SUMP — M-137 NH-36043 (B,1)
DRYWELL & REACTOR BLDG FLOOR DRAIN SUMP — M-137 NH-36043 (B,1)
M-141 NH-36047-1 (C,6) — SRW-66 6"-29 — 2
RWN19-4"-HC
RWN9-2"-HC
RWN8-3"-HC
1 1/2"-HC
RWN41-4"-HC
RWN24-3"-HC
RWN24-2"-HC
RWN49-2"-HC
RWN34-2"-HC
RWN25-2"-HC
RWN27-2"-HC
RWN29-2"-HC
RWN30-2"-HC
RWN28-2"-HC
RWN63-3"-HC
RWN64-4"-HC
RWN11-2"-HC
RWN 24-2"-HC
RWC2-2"-HC
RWC3-2"-HS
RWC4-1"-HC
CH11-1 1/2"-HK
CH20-4"-HK
CH7-2"-HC
CH12-2"-HC
CH27-4"-HC
CH26-4"-HC
CH8-1"-HF
D34-4"-HC
D33-4"-HC
D33-3"-HC
DW20-2"-HC
DW23-2"-HC
DW24-1"-HC
DW25-1"-HC
REW25-2"-HBD
HBD HC
VENT 4"
VENT 3"
VENT 1"-HC
VENT 4"-HC
FLOOR DRAIN COLLECTOR TANK T-26
1152 GAL/FT
10,000 GAL.
* MIXING EDUCATOR
FLOOR DRAIN COLLECTOR PUMP P-33
50 GPM
3227
TO WASTE SLUDGE TANK T-35 — M-140 NH-36046-2 (A,4)
TO WASTE SLUDGE TANK — M-141 NH-36047-1 (E,5)
FROM T-24 — M-139 NH-36045 (C,6)
FROM LT-2593 — M-139 NH-36045 (D,5)
FLOOR DRAIN HOLDING PUMP P-56
TO FLOOR DRAIN FILTER T-27 — M-140 NH-36046-2 (B,8)
FROM FLOOR DRAIN FILTER — M-140 NH-36046-2 (C,2)
WASTE COLLECTOR CROSS TIE — M-139 NH-36045 (C,6)
WASTE COLLECTOR CROSS TIE — M-139 NH-36045 (E,3)
TO WASTE COLLECTION RECYCLE LINE — M-139 NH-36045 (E,2)
UV UNIT T-209
TO OFF STANDARD RECYCLE LINE — M-139 NH-36045 (E,1)
FROM WASTE SAMPLE PUMPS DISCHARGE — M-139 NH-36045 (D,1)
WASTE COLLECTOR DEMIN. — M-139 NH-36045 (C,2)
FLOOR DRAIN SAMPLE TANK T-32
10,000 GAL
FLOOR DRAIN SAMPLE PUMP P-37
50 GPM
INTERLOCK FROM CIRC. WATER PUMPS — M-800 NH-36489 (B,2)
TO B HOPPER OR TRANSPORTATION LINER — M-114-2 NH-85509-2 (C,4)
TO B HOPPER OR TRANSPORTATION LINER — M-114-2 NH-85509-2 (C,3)
MACHINE SHOP DRAIN — M-137 NH-36043 (C,3)
VESSEL HEAD DECONTAMINATION AREA
LABORATORY DRAIN
DECONTAMINATION SOLUTIONS FROM WASTE PRECOAT TANK — M-139 NH-36045 (A,5)
CASK CLEANING AREA
MACHINE SHOP DRAIN — M-137 NH-36043 (C,3)
VESSEL HEAD DECONTAMINATION AREA
CHEMICAL WASTE TANK T-19
4000 GAL
CHEMICAL WASTE PUMP P-30
50 GPM
CUNO FILTER
LAUNDRY DRAIN TANK T-21B
LAUNDRY DRAIN TANK T-21A
1000 GAL
LAUNDRY DRAIN PUMPS P-29A & P-29B
25 GPM EACH
LAUNDRY DRAIN FILTER F-6
25 GPM
DEMINERALIZED WATER — M-108 NH-36039 (E,4)
PROCESS RADIATION WELL 17-300
TO DISCHARGE CANAL — M-800-1 NH-36489-2 (C,8)
SEE DWG M-139 NH-36045 (A,6) FOR AO VALVE DETAILS

NH-36046-2

REVISIONS	
76	EC 11951
	A/R 01121715
	DWN: JJP 3-4-08
	CHK: BJR 3-11-08
	APPR: RMG 3-12-08

BACKWASH COND. FROM COND. SERVICE PUMPS P-60A ,B (M-108) NH-36039 (D,6)

FROM WASTE PRECOAT PUMP P-34 (M-139) NH-36045 (A,5)

FROM WASTE COLLECTOR CROSS TIE (M-139) NH-36045 (E,3)

FROM FLOOR DRAIN COLLECTOR PUMP P-33 (M-140, SH. 1) NH-36046 (D-5)

FROM FLOOR DRAIN HOLDING PUMP P-56 (M-140, SH. 1) NH-36046 (D-4)

FROM AO-2601 NH-36045
FROM LS-26985 NH-36257
FROM AO-2807 NH-36257
FROM AO-2808 NH-36257
SEE NOTE 1

EQUIPMENT SKID INSIDE VAULT

FLOOR DRAIN FILTER T-27

FLOOR DRAIN FILTER RECEIVING TANK T-27B

AIR ACCUMULATOR T-27C

FROM AO-4091

TO AO-4094

FINAL FILTER (F-2)

OR/MSTRE SEP. FLTR. (F-1)

AIR COMP K-12

INSTRUMENT RACK C-301

TO WASTE SLUDGE TANK T-35 (M-141) NH-36047-1 (E-4)

FROM SRW-64 (M-139) NH-36045 (C,5)

FROM WASTE COLLECTOR FILTER T-25 BACKWASH (M-139) NH-36045 (C-4)

FROM FLOOR DRAIN COLLECTOR TANK T-26 (M-140, SH.1) NH-36046 (C-6)

VENT TO WASTE SLUDGE TANK T-35 (M-141) NH-36047 (E-5)

TO PRECOAT TANK T-30 (M-139) NH-36045 (C-3)

TO FLOOR DRAIN SAMPLE TANK T-32 (M-140, SH.1) NH-36046 (E-4)

TO FLOOR DRAIN HOLDING PUMP P-56 (M-140, SH.1) NH-36046 (D-4)

NOTES:

1. SYSTEM WILL NOT BACKWASH IF ANY ONE OF THE FOLLOWING CONDITIONS NOT ASSOCIATED WITH THE FLOOR DRAIN FILTER SYSTEM ARE PRESENT;
   A.) BACKWASHING WASTE COLLECTOR FILTER T-25 (AO-2601, OPEN).
   B.) HIGH LEVEL IN WASTE SLUDGE TANK (LS-2698)
   C.) BACKWASHING FUEL POOL FILTER/DEMIN. T-47A (AO-2807 OPEN)
   D.) BACKWASHING FUEL POOL FILTER/DEMIN T-47B (AO-2808 OPEN).

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

BECHTEL, WESTERN POWER DIVISION JOB No. 10040, DWG. No. M-140

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M-140

MONTI CAD DWG 'D'

SIGNIFICANT NUMBER	8700	---	RW	1	— 4420	1	LRW SRW
GROUP	1	2	3	4	5	CL	6

MONTICELLO NUCLEAR GENERATING PLANT UNIT 1

MONTICELLO NUCLEAR GENERATING PLANT P&ID DIRTY RADWASTE SYSTEM SHEET 2 OF 2

NORTHERN STATES POWER COMPANY MINNEAPOLIS

SCALE: NONE | REV 76

NH-36046-2

NH-36047-1

CONDENSATE PHASE SEPARATOR T-34A 13,000 GAL

CONDENSATE PHASE SEPARATOR T-34B 13,000 GAL

WASTE SLUDGE TANK T-35 7,500 GAL

CLEAN-UP PHASE SEPARATOR T-36A 3,000 GAL

CLEAN-UP PHASE SEPARATOR T-36B 3,000 GAL

SPENT RESIN TANK T-66 1,000 GAL

CONDENSATE BACKWASH RECEIVING TANK T-33 8,500 GAL

CENTRIFUGE S-14A 11

CENTRIFUGE S-14B 12

MOTOR

HOPPER S-15A 40 FT³ P.O. M35

CENTRIFUGE EFFLUENT TANK T-38 600 GAL

CONDENSATE/WASTE SLUDGE MIXING PUMP P-39 450 GPM

CLEAN-UP SLUDGE MIXING PUMP P-43 250 GPM

SPENT RESIN MIXING PUMP P-81 150 GPM

CONDENSATE BACKWASH TRANSFER PUMP P-79 450 GPM

CENTRIFUGE EFFLUENT PUMP P-44 50 GPM

WATER JET EDUCTOR

CONDENSATE/WASTE SLUDGE SYS. COND. WASTE SLUDGE SYS. SPENT RESIN SYS.

CONTROL SWITCHES

FROM FLOC AGENT PUMP M-139 NH-36045 (A,3)

TO VENT DUCT

TO FLOOR DRAIN COLLECTOR TANK T-26 M-140 NH-36046 (E,6)

TO WASTE COLLECTOR TANK M-139 NH-36045 (E,6)

TO COND. HOTWELL M-105 NH-36036 (C,6)

CONTINUES TO M-104-2 NH-36035-2 (C,2)

TO 1.75 MIN HOLD-UP LINE M-104-1 NH-36035-2 (C,2)

TO CRW SUMP S-44 M-138 NH-36044 (B,5)

TO PUMPS P-B3 A & B START TO SV-2641 & SV-2643 M-139 NH-36045 (A,3)

FROM FW-36 M-105 NH-36036 (A,4)

SERVICE CONDENSATE M-114-1 NH-85509 (B,1)

SERVICE AIR M-131 NH-36049-4 (C,3)

TO SHIPPING LINER FLOOR SUMP M-141-2 NH-36047-2 (C,5)

TO FLUSHLINE M-141-2 NH-36047-2 (C,5)

SERVICE CONDENSATE M-114-2 NH-85509-2 (E,5)

TO WASTE COLLECTOR TANK M-139 NH-36045 (E,6)

FROM "B" HOPPER M-141-2 NH-36047-2 (B,3)

TO WASTE SLUDGE TANK (E,4)

TO CONVEYOR FLOOR DRAIN SUMP M-137 NH-36043 (B,3)

TO CONVEYOR FLOOR DRAIN SUMP M-137 NH-36043 (B,3)

WASTE COLLECTOR DEMIN RESIN DISCH M-139 NH-36045 (C,4)

WASTE COLLECTOR DEMIN VENT M-139 NH-36045 (D,3)

CLEAN-UP FILTER/DEMIN BACKWASH RT37-3"-HE (C,1)

CLEAN-UP FILTER/DEMIN VENTS V54-1"-HC (E,1)

M-129 NH-36255

FROM FLOOR DRAIN COLLECTOR TK. O'FLOW M-140 NH-36046 (C,6)

FUEL POOL FILTER/DEMIN. BACKWASH M-136 NH-36257 (B,4)

FLOOR DRAIN FILTER BACKWASH & WASTE COLLECTOR FILTER BACKWASH M-140 NH-36046-2 (A,6)

WASTE COLLECTOR FILTER VENT M-139 NH-36045 (C,4)

FUEL POOL FILTER/DEMIN VENT M-136 NH-36257 (E,1)

CONVEYOR FLOOR DRAIN SUMP M-137 NH-36043 (B,2)

FROM CH27- 3/4"-HK

FROM CH28- 3/4"-HK

FROM FLOC AGENT PUMP M-139 NH-36045 (A,3)

TO VENT DUCT

A/S M-131 NH-36049-4 (C,5)

A/S M-131 NH-36049-11 (C,2)

SERVICE CONDENSATE M-114-1 NH-85509 (D,3)&(E,2)

SERVICE CONDENSATE M-114-1 NH-85509 (E,2)

SERVICE CONDENSATE M-114-1 NH-85509

SERVICE CONDENSATE M-114-1 NH-85509

DETAIL (A) (TYP. FOR 24)

DETAIL (B) (TYP. FOR 5)

B1 AO-2742
B2 AO-2743
B3 AO-2744
B4 AO-2745
B5 AO-2746

NOTES:

1. SEE DWG. M-139 (A,6) FOR AO DETAILS.
2. SEE VENDOR DWG. F.P. 5828-M35-12-1 FOR AIR PIPING DETAILS.
3. FI-2718 AND FI-2735 ABANDONED IN PLACE.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

REVISIONS

77	EC 11951 A/R 01121715 DWN: JJP 3-4-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78	EC 12127 A/R 01113763 DWN: JJP 3-17-08 CHK: BAL 3-20-08 APPR: JCG 3-24-08
79	EC 9655 DWN: JJP 12-8-09 CHK: BAL 12-9-09 APPR: KEC 12-9-09
80	EC 15325 DWN: JJP 3-15-10 CHK: PEB 3-15-10 APPR: JPC 3-17-10
81	EC 11006 DWN: JJP 4-29-11 CHK: DDW 4/29/11 APPR: AR 4-29-11
82	EC 18294 DWN: JJP 6-20-11 CHK: AWL 6-20-11 APPR: DDW 6-20-11
83	EC 20427 DWN: JJP 7-26-12 CHK: BAL 7-27-12 APPR: JPC 8-1-12
84	EC 25356 DWN: JJP 3-12-15 CHK: BAL 3-16-15 APPR: AJW 3-16-15
85	EC 24489 DWN: JJP 7-12-16 CHK: BAL 7-15-16 APPR: AJW 7-15-16
86	EC 27482 DWN: JJP 11-16-16 CHK: BAL 11-25-16 APPR: JCG 11-29-16

M-141

MONTI CAD DWG

RADWASTE SOLIDS HANDLING SYSTEM PIPING AND INSTRUMENTATION DIAGRAM

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy™ NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 86

NH-36047-1

NH-36047-2

REVISIONS
76 EC 11951
A/R 01121715
DWN: JJP 3-4-08
CHK: BJR 3-11-08
APPR: RMG 3-12-08

SERVICE AIR M-131 NH-36049-4 (C,4)
AS 646
PI 4535
C-338
RI DARM 6
RE DARM 6
CST-171
2" HE
1 1/2" HE
AO 4457
HS 4457
TO CONVEYOR FLOOR DRAIN SUMP M-137 NH-36043 (B,3)
1 1/2" EF
AO 4458
HS 4458
SRW-42
RADWASTE SHIPPING AREA
WEST END # 1 BARREL ISLE
1 1/4" HE
1 1/2" EF
SRW-41
1" HE
GRAB SAMPLE
ORW
CST-195
CST-194
AO-2750 FLUSH M-141 NH-36047-1 (B,4)
1 1/2" EF
1 1/4" HE
FROM SPENT RESIN & PHASE SEPARATOR TANKS M-141 NH-36047-1 (C,4)
CV 4456
HCS 4456
AO 4455
HS 4455
JB
HE
RO
CST-169
CST-170
1" JB
SERVICE CONDENSATE M-114-2 NH-85509-2 (B,3)
SRW-34
SRW-40
1 BARREL ISLE
PI 7986

SOLENOID VALVE STAINLESS STEEL
SERVICE AIR M-131 NH-36049-4 (C,5)
3/8"
1/4"
NEEDLE VALVE
1/4"
AO
FROM CONDENSATE SERVICE WATER M-114-2 NH-85509-2 (B,3)
1 1/2"
AV/DS-W1
AV/DS-N1
DECON HOOD HOIST MOTOR 3/4" H.P. 460-3ø M
2 AIR BLAST NOZZLE
LIMIT SWITCH 61
1 1/2"
DECON HOOD GUIDE RAIL
LIMIT SWITCH 62
1/4"
DRUM DECON STATION

DUST COLLECTOR
FAN
1" HB
DRW-125
DRW-124
TO B HOPPER ADD WATER VALVE M-114-2 NH-85509-2 (C,2)
FROM CENTRIFUGE S-14B M-141-1 NH-36047-1 (B,3)
BUCKET ELEVATOR
CEMENT BIN
LS 7952
LS 7950
LS 7943
MOTOR OPERATED VIBRATOR
CEMENT FEEDER 1
CEMENT FEEDER 2
1" JB
SRW-32
TO WASTE SLUDGE TANK M-141 NH-36047-1 (A,3)
AGITATOR
HOPPER S15B
M-114-2 NH-85509-2 (B,4)(B,4)(C,4)
RM 7946
LS 2758
C84
H
LT 7955
LI 7947
FCP 7949
FI 7948
FT 7953
BACK PRESSURE CONTROL VALVE
AS-54
AO 2762
AO
SRW-33
WASTE FEEDER
MO 4374
MIXER-FEEDER
SV
AS-64
C98
PCV
AS-63
LI 7954
LI 7951
LS 7944
LS 7945
SERVICE AIR M-131 NH-36049-4 (D,5)
RADWASTE SOLIDIFICATION SYSTEM

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-141-2
MONTI CAD DWG 'G'

SIGNIFICANT NUMBER	8700		RW	1	4420	1	SRW
GROUP	1	2	3	4	5	CL	6

MONTICELLO NUCLEAR GENERATING PLANT UNIT 1

MONTICELLO NUCLEAR GENERATING PLANT
P&ID
RADWASTE SOLIDS HANDLING SYSTEM

NORTHERN STATES POWER COMPANY
MINNEAPOLIS

SCALE: NONE | REV 76

NH-36047-2

NH-36049-1

REVISIONS
76 EC8773 A/R 01036321 DWN: JJP 8-17-06 CHK: BAL 8-17-06 APPR: JD 8-17-06
77 EC11951 A/R 01121715 DWN: JJP 3-4-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78 EC1011 DWN: JJP 5-1-08 CHK: DJP 5-1-08 APPR: RKJ 5-1-08
79 EC14915 DWN: JJP 10-19-09 CHK: BAL 10-20-09 APPR: CLT 10-20-09
80 EC14882 DWN: JJP 1-25-10 CHK: DDW 1-26-10 APPR: AJD 1-26-10
81 EC14882 DWN: JJP 2-8-10 CHK: DDW 3-2-10 APPR: RLP 3-2-10
82 EC21889 DWN: JJP 4-3-14 CHK: BAL 4-4-14 APPR: MLW 4-7-14

FROM PT-7999B M-131 NH-36049-2 (D,3)

FROM PT-7999A M-131 NH-36049-2 (D,3)

TO ES8 (SEQC-1)

15 INST & SERVICE AIR COMPRESSOR K-1E 717 SCFM
FOR DETAILS SEE NX-74416-1

AIR COMPRESSOR TROUBLE C06 A

CONTROL/ MONITORING PANEL

AIR FILTER

AI-1089-1

IA16-1/2"-JF

IA16-1/2"-JF

ORW

CCW-40-1 TI 7998-1 3/4"

CCW-35-1 2"X1 1/2"

CCW-21-1 2"X1 1/2"

CH31-2"-JF

PI 7996-1

AI-1094-1

AI-1092-1 3/4"

1"

AI-1093-1

IA15-3"-HS

CCW-34-1

CH32-2"-JF

CCW-36-1

CCW-39-1 3/4"

CCW-33-1 2 1/2"X2"

CCW-42-1 3/4"

CCW-37-1 3/4"

K-115A K-115B K-115C

FLUID COOLER 15

CH31-2"-JF

OUTSIDE INSIDE

82

DPS 7997-1

T-230 EXPANSION TANK

P-230A P-230B

CCW-23-1 CCW-24-1 CCW-28-1 CCW-26-1 CCW-27-1 CCW-29-1 CCW-22-1 CCW-38-1 CCW-25-1

AV 7997-1

RV 1130-1

TI 7997-1

CCW-30-1 CCW-41-1 CCW-32-1 3/4"

CCW-31-1

PI 7997-1A PI 7997-1B

CLOSED COOLING PUMP SKID 15

AI-1095-1 IA15-3"-HS COMPRESSED AIR M-131 NH-36049-2 (D,8)

AI-1114-1

16 INST & SERVICE AIR COMPRESSOR K-1F 717 SCFM
FOR DETAILS SEE NX-74416-1

AIR COMPRESSOR TROUBLE C06 A

CONTROL/ MONITORING PANEL

AIR FILTER

AI-1089-2

IA16-1/2"-JF

IA16-1/2"-JF

ORW

CCW-40-2 TI 7998-2 3/4"

CCW-35-2 2"X1 1/2"

CCW-21-2 2"X1 1/2"

CH33-2"-JF

PI 7996-2

AI-1094-2

AI-1092-2 3/4"

1"

AI-1093-2

IA15-3"-HS

CCW-34-2

CH34-2"-JF

CCW-36-2

CCW-39-2 3/4"

CCW-33-2 2 1/2"X2"

CCW-42-2 3/4"

CCW-37-2 3/4"

K-116A K-116B K-116C

FLUID COOLER 16

CH33-2"-JF

OUTSIDE INSIDE

82

DPS 7997-2

T-231 EXPANSION TANK

P-231A P-231B

CCW-23-2 CCW-24-2 CCW-28-2 CCW-26-2 CCW-27-2 CCW-29-2 CCW-22-2 CCW-38-2 CCW-25-2

AV 7997-2

RV 1130-2

TI 7997-2

CCW-30-2 CCW-41-2 CCW-32-2 3/4"

CCW-31-2

PI 7997-2A PI 7997-2B

CLOSED COOLING PUMP SKID 16

AI-1095-2 IA15-3"-HS COMPRESSED AIR M-131 NH-36049-2 (C,8)

AI-1114-2

17 INST & SERVICE AIR COMPRESSOR K-1G 717 SCFM
FOR DETAILS SEE NX-74416-1

AIR COMPRESSOR TROUBLE C06 A

CONTROL/ MONITORING PANEL

AIR FILTER

AI-1089-3

IA16-1/2"-JF

IA16-1/2"-JF

ORW

CCW-40-3 TI 7998-3 3/4"

CCW-35-3 2"X1 1/2"

CCW-21-3 2"X1 1/2"

CH35-2"-JF

PI 7996-3

AI-1094-3

AI-1092-3 3/4"

1"

AI-1093-3

IA15-3"-HS

CCW-34-3

CH36-2"-JF

CCW-36-3

CCW-39-3 3/4"

CCW-33-3 2 1/2"X2"

CCW-42-3 3/4"

CCW-37-3 3/4"

K-117A K-117B K-117C

FLUID COOLER 17

CH35-2"-JF

OUTSIDE INSIDE

82

DPS 7997-3

T-232 EXPANSION TANK

P-232A P-232B

CCW-23-3 CCW-24-3 CCW-28-3 CCW-26-3 CCW-27-3 CCW-29-3 CCW-22-3 CCW-38-3 CCW-25-3

AV 7997-3

RV 1130-3

TI 7997-3

CCW-30-3 CCW-41-3 CCW-32-3 3/4"

CCW-31-3

PI 7997-3A PI 7997-3B

CLOSED COOLING PUMP SKID 17

AI-1095-3 IA15-3"-HS COMPRESSED AIR M-131 NH-36049-2 (B,8)

AI-1114-2

IA15-3"-HS

TEMPORARY PLANT AIR SUPPLY LINE

OUTSIDE INSIDE

AI-1112 AI-1113 IA15-3"-HS

TO OPEN RAD WASTE DRAIN IN MACH. SHOP M-137 NH-36043 (C,5)

ORW

COMPRESSED AIR BUILDING
EL. 934'

NOTES:

1. THIS DRAWING SUPERCEDES NH-36049-1 REV. 76.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-131 MONTI CAD DWG "AP"

P&ID
COMPRESSED AIR SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE REV 82

NH-36049-1

NH-36049-2

INST & SERVICE AIR DRYER S-121 900 SCFM (SEE NX-74422-1 FOR DETAILS) 15 — AIR DRYER TROUBLE C06 A

PRE-FILTERS: AI-1096-1A, AI-1117-1A, AI-1098-1A, AI-1097-1A; dPI 7998-1A, F-15A; AUTO DRAIN VALVE; dPI 7998-1B, F-15B; AUTO DRAIN VALVE; AI-1096-1B, AI-1117-1B, AI-1098-1B, AI-1097-1B

AI-1099-1 — RV 9310-1A TO ATM — S-121A / VESSEL: DRY ME-1A; PURGE EXHAUST; REGEN ME-1B / S-121B / VESSEL — RV 9310-1B TO ATM — AI-1100-1 INLET & EXHAUST VALVE ASSEMBLY — AI-1101-1 OUTLET VALVE ASSEMBLY — AI-1102-1 — AI-1103-1

AFTER-FILTERS: dPI 7998-1C, F-15C, AI-1104-1A, AI-1117-1C, AI-1105-1A; dPI 7998-1D, F-15D, AI-1104-1B, AI-1117-1D, AI-1105-1B

M-131 NH-36049-1 (D,2) — AI-1106-1 — IA17-3"-JB — IA19-1/2"-JF — ORW

INST & SERVICE AIR DRYER S-122 900 SCFM (SEE NX-74422-1 FOR DETAILS) 16 — AIR DRYER TROUBLE C06 A

PRE-FILTERS: AI-1096-2A, AI-1117-2A, AI-1098-2A, AI-1097-2A; dPI 7998-2A, F-16A; AUTO DRAIN VALVE; dPI 7998-2B, F-16B; AUTO DRAIN VALVE; AI-1096-2B, AI-1117-2B, AI-1098-2B, AI-1097-2B

AI-1099-2 — RV 9310-2A TO ATM — S-122A / VESSEL: DRY ME-2A; PURGE EXHAUST; REGEN ME-2B / S-122B / VESSEL — RV 9310-2B TO ATM — AI-1100-2 INLET & EXHAUST VALVE ASSEMBLY — AI-1101-2 OUTLET VALVE ASSEMBLY — AI-1102-2 — AI-1103-2

AFTER-FILTERS: dPI 7998-2C, F-16C, AI-1104-2A, AI-1117-2C, AI-1105-2A; dPI 7998-2D, F-16D, AI-1104-2B, AI-1117-2D, AI-1105-2B

M-131 NH-36049-1 (C,2) — AI-1106-2 — IA17-3"-JB — IA19-1/2"-JF — ORW

INST & SERVICE AIR DRYER S-123 900 SCFM (SEE NX-74422-1 FOR DETAILS) 17 — AIR DRYER TROUBLE C06 A

PRE-FILTERS: AI-1096-3A, AI-1117-3A, AI-1098-3A, AI-1097-3A; dPI 7998-3A, F-17A; AUTO DRAIN VALVE; dPI 7998-3B, F-17B; AUTO DRAIN VALVE; AI-1096-3B, AI-1117-3B, AI-1098-3B, AI-1097-3B

AI-1099-3 — RV 9310-3A TO ATM — S-123A / VESSEL: DRY ME-3A; PURGE EXHAUST; REGEN ME-3B / S-123B / VESSEL — RV 9310-3B TO ATM — AI-1100-3 INLET & EXHAUST VALVE ASSEMBLY — AI-1101-3 OUTLET VALVE ASSEMBLY — AI-1102-3 — AI-1103-3

AFTER-FILTERS: dPI 7998-3C, F-17C, AI-1104-3A, AI-1117-3C, AI-1105-3A; dPI 7998-3D, F-17D, AI-1104-3B, AI-1117-3D, AI-1105-3B

M-131 NH-36049-1 (A,2) — AI-1106-3 — IA17-3"-JB — IA19-1/2"-JF — ORW

RV 9311-1 TO ATM — 1" — AI-1110-1 3/4" — PI 8000E — INST. & SERVICE AIR RECEIVER T-39E 15 — IA17-3"-JB 6"X3" — AI-1111-1

FI 9341E — FE 9341E — AI-1107-1 6"X3" — AI-1117-1 1/4" — DT 7389 — YS 7389 — 1"X1/2" — AI-1108-1 — IA18-1"-JF — AI-1109-1

RV 9311-2 TO ATM — 1" — AI-1110-2 3/4" — PI 8000F — INST. & SERVICE AIR RECEIVER T-39F 16 — IA17-3"-JB 6"X3" — AI-1111-2

FI 9341F — FE 9341F — AI-1107-2 6"X3" — AI-1117-2 1/4" — DT 7390 — YS 7390 — 1"X1/2" — AI-1108-2 — IA18-1"-JF — AI-1109-2

IA17-3"-JB

RV 9311-3 TO ATM — 1" — AI-1110-3 3/4" — PI 8000G — INST. & SERVICE AIR RECEIVER T-39G 17 — IA17-3"-JB 6"X3" — AI-1111-3

FI 9341G — FE 9341G — AI-1107-3 6"X3" — AI-1117-3 1/4" — DT 7391 — YS 7391 — 1"X1/2" — AI-1108-3 — IA18-1"-JF — AI-1109-3

IA18-1"-JF

COMPRESSED AIR BUILDING EL. 934'

NON 1E DIESEL ROOM EL. 931'

TURBINE BUILDING EL. 911'

AS-178 — L.O. — AS-177 — VALVE INTERNALS REMOVED — 3" JB — AS-176 — AS-209 — AI-1116 — 3"-JB — AS-240 — SERVICE AIR M-131 NH-36049-4 (D,4)

SV-1507 & CV-1507 M-131 NH-36049-3 (C,6)
SV-1470 & CV-1470 M-131 NH-36049-11 (C,7)
SV-1472 & CV-1472 M-131 NH-36049-14 (D,8)
SV-1469 & CV-1469 M-131 NH-36049-3 (D,5)

87 — C202 PS 1469 80 PSIG L — I-AIR-P-10 — I-AIR-P-25

TO OPEN RAD WASTE DRAIN IN MACH. SHOP M-137 NH-36043 (C,5) — ORW

SV 1474 — C06 HS 1474 — 87 — AIR SET — 3/4"-JB — AI-143

CV 1474 N.O./F.C. — SA5-3"-JB — 1"-JB — AS-241

C06 A L — C202 PS 1481 — C202 PI 1480 — FE 4379 — FI 4379

I-AIR-P-13, I-AIR-P-14, I-AIR-P-26, I-AIR-P-4, I-AIR-T-1

TO ES8 (SEQC-1) M-131 NH-36049-1 (D,2)
TO ES8 (SEQC-1) M-131 NH-36049-1 (D,2)

C06 E/S C06C — C06 PI 1476 — PT 1476 — I-AIR-P-9 — C06 A L — C07 PR 1176 — C202 PS 1474 L — C202 PI 1475 — I-AIR-P-5, I-AIR-P-6, I-AIR-P-7 — PT 7999A — PT 7999B — I-AIR-P-8 — I-AIR-R-3 — I-AIR-P-22 — I-AIR-P-23 — I-AIR-P-11 — I-AIR-P-24

AI-753 2"-156 — AI-752 3"-150 — AI-2 3"-68 — JB — JBD — JD — IF — IA6-3"-JD — M-131 NH-36049-3 (C,7)

AI-5 2"-73 — AI-197 — AI-192

I-AIR-P-30 — AIR SET — TO SV-4151 M-2500 NH-100320 (D,5) — I-AIR-P-35
I-AIR-P-31 — AIR SET — TO SV-4152A M-2500 NH-100320 (D,4) — TO EP-4152A M-2500 NH-100320 (D,4) — I-AIR-P-36
I-AIR-P-32 — AIR SET — TO SV-4152B M-2500 NH-100320 (C,4) — TO EP-4152B M-2500 NH-100320 (C,4) — I-AIR-P-37

REVISIONS

076 EC 7441
DWN: JJP 4-12-06
CHK: BAL 4-13-06
APPR: JD 4-18-06

77 EC 1011
DWN: JJP 2-27-07
CHK: BAL 2-27-07
APPR: DJP 2-27-07

78 EC 11984
A/R 01113614
DWN: JJP 1-8-08
CHK: BAL 1-11-08
APPR: GEH 1-14-08

79 EC 11951
A/R 01121715
DWN: JJP 3-5-08
CHK: BJR 3-11-08
APPR: RMG 3-12-08

80 EC 14568
DWN: JLL 7-29-09
CHK: DDW 9-22-09
APPR: BML 9-22-09

81 EC 14882
DWN: JJP 1-25-10
CHK: DDW 1-26-10
APPR: AJD 1-26-10

82 EC 14882
DWN: JJP 2-8-10
CHK: DDW 3-2-10
APPR: RLP 3-2-10

83 EC 16367
DWN: JJP 3-29-11
CHK: BAL 3-29-11
APPR: DDW 3-30-11

84 EC 21453
DWN: JJP 5-10-13
CHK: PEB 5-10-13
APPR: ERN 5-12-13

85 EC 21454
DWN: JJP 6-7-13
CHK: GMP 6-9-13
APPR: NTM 6-9-13

86 EC 23889
DWN: JJP 4-14-17
CHK: BAL 4-14-17
APPR: SJH 4-14-17

87 EC 6MOD00027208
DWN: NJM 8-10-17
CHK: NJF 8-11-17
APPR: AJR 8-11-17

COLOR LEGEND
ASME CLASS 1/QUALITY GROUP A
ASME CLASS 2/QUALITY GROUP B
ASME CLASS 3/QUALITY GROUP C
QUALITY GROUP D
SAFETY RELATED MECHANICAL
SAFETY RELATED ELECTRICAL
SPECIAL CONCERNS ITEM

M-131
MONTI CAD DWG "V"

P&ID
INSTRUMENT AIR SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE
REV 87

NH-36049-2

NH-36049-3

REVISIONS

87	EC 22458
	DWN: JJP 7-15-13 CHK: BAL 7-15-13 APPR: NTM 7-15-13
88	EC 24717
	DWN: JJP 10-21-14 CHK: AJR 10-23-14 APPR: JOJ 10-29-14
89	EC 25268
	DWN: JJP 2-10-15 CHK: BAL 2-10-15 APPR: WMS 2-10-15
90	EC 19978
	DWN: JJP 4-23-15 CHK: BAL 4-26-15 APPR: MAC 4-27-15
91	EC 6MOD00027208
	DWN: NJM 8-10-17 CHK: NJF 8-11-17 APPR: AJR 8-11-17
92	6MODWM027022
	DWN: JJP 6-8-18 CHK: BAL 6-8-18 APPR: JCG 6-8-18

TO INTAKE STRUCTURE SPRINKLER SYSTEM

BLEACH SYSTEM

TO LUBE OIL HEAT ACT. DEVICE (FIRE PROTECTION)

DIESEL FIRE PUMP HOUSE

CIRC. BASIN

WATER LEVEL

TO RACK C-297A P2A SEAL WATER

TO RACK C-297B P2B SEAL WATER

TO RACK C-559 RECIRC VALVE CV-3490

TO RACK C-558 RECIRC VALVE CV-3489

AIR SET

N.O./F.C.

DRAIN

TO LOW FLOW FW REG CONTROL VALVE CV-6-13

TO RACK C-557 FW REG CONTROL VALVE CV-6-12B

TO RACK C-556 FW REG CONTROL VALVE CV-6-12A

TO RACK C-200A/B

TO CV-3132

TO CV-1017

TO E/P-1017

TO E/P-4120

TO E/P-4121

TO CV-4120

TO CV-4121

TO CV-4124

TO CV-4125

TO CALIBRATION REGULATOR

H2 CONT. VALVE

HEADER CROSS TIE

TURBINE AIR OIL RELAYS

TO TURBINE GENERATOR BEARING SPRINKLER SYSTEM

TEST CONN. TOP L.O. TANK

CV-1199A & B (SPILL VALVE)

CV-1033

CV-1036

CV-1072

CV-1075

CV-1226A & B (SPILL VALVE)

HOOD SPRAY CV

FRONT STANDARD

#3 INTERMED STOP TEST SOLENOID

#3 INTERCEPT TEST SOLENOID

DRAIN

#4 INTERCEPT VALVE TEST SOLENOID

#4 INTERMED STOP VALVE TEST SOLENOID

RACK C-210

CV-1019 #15A HEATER DRAIN

E/P-1019 FOR CV-1019

CV-1002 "B" MS DRN TK DRN

CV-3133 "A" MS DRN TK DRN

SPARE

#1 SV RELAY

#2 SV RELAY

#3 SV RELAY

#4 SV RELAY

SUPPLY TO CV RELAYS

#2 INTERMED STOP VALVE TEST SOLENOID

#2 INTERCEPT VALVE TEST SOLENOID

SV-1012 FOR CV-1012 #11A HEATER DUMP

SV-1051 FOR CV-1051 #11B HEATER DUMP

SV-1032 SUPPLY AIR

SV-1035 SUPPLY AIR

#11 AIR EJECTOR SUCTION

AO-1083A (D,2)

AO-1083B (C,1)

SV-1071 SUPPLY AIR

SV-1074 SUPPLY AIR

TURNING GEAR HDR VENT

TURNING GEAR SOLENOID

#1 INTERCEPT VALVE TEST SOLENOID

#1 INTERMED STOP VALVE TEST SOLENOID

#12 AIR EJECTOR SUCTION

AO-1084A

AO-1084B

HTB FW VALVE AO-4321 (B,3)
HTB DEAERATOR OVERFLOW LVL TRANS LT-4330 (C,1)
HTB BOILER DEAERATOR OVERFLOW LCV LCV-4330 (C,1)
HTB DEAERATOR LVL TRANS LT-6184 (C,2)
HTB DEAERATOR MAKE-UP LCV LCV-3378 (C,3)

MAIN CONST. STATION FOR CV-1621 (E,5)

HEATING BOILER ROOM AIR HANDLING UNIT V-AH-5

HEATING BOILER DAY TANK CV-1531

TO HOT & COLD LABS

VENT DG DELUGE #12 EDG ROOM

ACCUM

SIDING & TRANSFORMER DELUGE

DRAIN

DIESEL ROOM DELUGE

SPARE

TO VM2-6

VAH-2 VMZ-5

VMZ-1 VAH-1

DIESEL GEN H & V

RACK C-203

EP-1001 FOR CV-1001

EP-1003 FOR CV-1003 CV-2590 CV-2510

EP-1002 FOR CV-1002

RACK C531

EP-1016 FOR CV-1016

EP-1014 FOR CV-1014

EP-1018 FOR CV-1018

EP-1020 FOR CV-1020 CV-2589 CV-2509

EP-1004 FOR CV-1004

DRAIN

CV-3127 "A" MS DRN TK DUMP

EP-3126 FOR CV-3127

EP-3130 FOR CV-3134

EP-3125 FOR CV-3133

EP-3131 FOR CV-3132

CV-1018 14A HTR DUMP

CV-1020 15A HTR DUMP

CV-1001 "B" MS DRN TK DUMP

CV-1003 "C" MS DRN TK DUMP

CV-1016 – 13A HTR DUMP

CV-1014 – 12A HTR DUMP

DRAIN

MLS-1228A MSDT A COND. INJECTION NH-236609 (D,3)

MLS-1228B MSDT B COND. INJECTION NH-236609 (D,3)

MLS-1228C MSDT C COND. INJECTION NH-236609 (C,3)

MLS-1228D MSDT D COND. INJECTION NH-236609 (B,3)

A/S-1228A MSDT A COND. INJECTION NH-236609 (D,3)

A/S-1228B MSDT B COND. INJECTION NH-236609 (D,3)

A/S-1228C MSDT C COND. INJECTION NH-236609 (C,3)

A/S-1228D MSDT D COND. INJECTION NH-236609 (B,3)

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-131

MONTI CAD DWG "AA"

P&ID

INSTRUMENT AIR – TURBINE BUILDING

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy® NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 92

NH-36049-3

NH-36049-4

2"-65 AS-18

REACTOR TURBINE

M-131 NH-36049-2 (A,3)

AS-29

M-131 NH-36049-2 (A,3)

1 1/2"-65 AS-34

AS-81 AS-80 AS-79 AS-78 AS-40 AS-39 L.C. L.C. X-21

AS-126 RCIC RM.

SERVICE AIR ISOLATION VALVE TORUS TOP/BOTTOM

AS-66-4 AS-66-1 AS-66-2 AS-66-5 AS-66-3 AS-66

AS-54 AS-56 AS-57 AS-55 11 XR PUMP 12 XR PUMP

AS-59 PS 3054 AS-58 AS-61 PS 3053 AS-60

BREATHING AIR STATION

AS-82 REACTOR FEED PUMP AREA

1 1/2"-65 AS-12

AS-12-1 AS-12-2 3.8 kV ROOM AS-12-3

88

AS-83 H.P. COND. (N. WALL - 911')

AS-85 AS-193 AS-192

AS-88 AS-87 AS-86 SCREEN HOUSE INTAKE STRUCTURE

AS-87-1

AS-11

AS-84

1 1/2"-65 AS-10

AS-90 #11 #12 DIESEL GEN. ROOM

AS-93 4 KV 5.6 EL. 931'

AS-92 4 KV 5.6 EL. 911'

AS-89 TB NORTH EL. 951'

AS-91

AS-101 A.E PURGE SUPPLY

AS-94 TB RAILROAD ACCESS AREA

AS-100 SJAE RM

AS-95 TB EQUIPMENT DRN SUMP AREA

AS-211 TO T-33 M-141 NH-36047-1 (B,5)

AS-98 COND. DEMIN. AREA

AS-97 SAMPLE RACK C-213B SAMPLE HOOD

AS-112

AS-96 SAMPLE HOOD SAMPLE RACK C-213A;C-213B

AS-49

AS-99

AS-53 H2 HOUSE

MOISTURE REMOVER H2 HOUSE

AS-72

AS-51 CYLINDER HOIST

AS-50 TB FLOOR SW CORNER

AS-124 TB FLOOR - S. WALL BY 15A HEATER

AS-125 TB DR. COOLER AREA - 911'

AS-15

AS-14

AS-113 AS-109 DEMIN. BY-PASS VALVE AREA

AS-67

AS-114 AS-115 AS-116 AS-117 AS-118

AS-119 AS-120 AS-121 AS-122 AS-123

AS-68

1 1/2"-65 AS-13

AS-110 HTG. BLR. ROOM

AS-111

AS-69 AS-167 EFT 3RD FLOOR

FAB SHOP AS-168

AS-166 EFT 2ND FLOOR

NON 1-E ROOM AS-168-1

ATOMIZING AIR M-146 NH-36348 (B,5)

AS-165 EFT 1ST FLOOR

NON 1-E ROOM AS-107

AS-17

TURBINE FLOOR E. WALL

AS-104 AS-106

AS-105 MAKE-UP DEMIN. AREA

M-131 NH-36049-9 (C,6)

DSA-4

RAD WASTE SOLIDS HANDLING C-338 M-141-2 NH-36047-2 (C,8)

R.B. EL. 962' R.B. EL. 935'

AS-16 AS-127 EAST WALL 935'

AS-129 AS-175 SOUTH WALL

AS-70 AS-131 RW PUMP ROOM AS-38

AS-133 #12 RHR ROOM AS-71

AS-134-1 AS-134-2 AS-134-3 DRYWELL EQUIPMENT HATCH

AS-128 #11 RHR ROOM

AS-20 M-143 NH-36258 (C,5)

AS-169 3RD FLOOR PUMP RM.

AS-62 M-141-2 NH-36047-2 (D,4)

CLEAN TOOL CRIB

AS-186 AS-187 AS-188 EQUIP. STORAGE AREAS, EL. 962'

AS-185 STANDBY LIQUID TANK T-200 AS-19 M-127 NH-36253 (D,1)

AS-42

AS-155 HOT TOOL CRIB EL.962'

AS-140 OUTSIDE CRD REPAIR ROOM EL. 962'

962' RW AS-243

947' RW AS-242 AS-244

AS-223-10 AS-132-1 AS-132-2 AS-132-3 RW BLDG. 935'

AS-223-3 AS-223-5 AS-223-2 AS-223-4 AS-223-1 AS-223-6 AS-223-7 AS-223-8 AS-223-9

RAD WASTE BARREL AISLE EQUIPMENT

AS-136 AS-135 AS-142 STEAM CHASE STEP-OFF PAD AREA CRD PUMP ROOM AREA R.B. EL. 962' NORTH WALL

AS-137-1 AS-137-2 AS-137-3 AS-137-4 AS-137-5 CRD REPAIR AREA - 935'

AS-130 AS-130-1

AS-217 AS-218 AS-219 RW SHIPPING BLDG M-141 NH-36047-1 (E,1)

AS-238 AS-220 AS-239 AS-221 RW SHIPPING BLDG ADDITION M-141 NH-36047-1 (A,4)

AS-138-2 AS-138-1 MG SET ROOM

AS-141 AS-139 OUTSIDE REACTOR CLEAN-UP PUMP ROOM

AS-41 AS-247 AS-28 MG SET ROOM

R.B. EL. 1001' NORTH WALL AS-210

AS-159-1 AS-159-2 AS-159-3 AS-159-4 AS-159-5 AS-159-6 AS-159-7 AS-159-8 AS-159-9 AS-159-10 AS-159-11 AS-159-12 AS-159-13 AS-159-14 AS-159-15 AS-214

REACTOR BLDG. POOL CONNECTION

AS-215 TO NORTH FUEL PREP. MACHINE

AS-216 TO SOUTH FUEL PREP. MACHINE

R.B. EL. 1001' R.B. EL. 1027'

AS-143 FUEL POOL PUMP ROOM

AS-27 AS-27-1

TO FUEL POOL FIL./DEMIN. T-47 A & B M-136 NH-36257 (E,1)

AS-164 AS-174 AS-204 AS-203 AS-208 AS-202 AS-201 AS-207 AS-205 AS-206 1001' TOOL STORAGE AREA

AS-170 AS-171 AT CGCS 985'

AS-147 985' WEST

AS-25 AS-43 AS-44 AS-47 AS-249

AS-35 AS-179 AS-146 PUMP RM. 985' DRAIN AS-184

TO WASTE COLL. DEMIN. T-65 M-139 NH-36045 (C,3)

TO WASTE COLL. FILTER T-25 M-139 NH-36045 (E,5)

CAPPED IN RADWASTE PUMP RM EL. 985'

TO RWCU FIL/DEMIN. T-202 A & B M-129 NH-36255 (E,1)

AS-163 R.B. 1001'

AS-173 AS-162 AS-161 AS-257 1001' SNUBBER REBUILD AREA

RELIEF VALVE TEST STAND

R.B. EL. 1001' WEST WALL AS-148

R.B. EL. 1001' DECON. AREA AS-153

FILTER

REFUEL FLOOR WEST WALL

REFUEL FLOOR NORTH WALL

AS-149 AS-172 AS-152 AS-151 AS-150

R.B. EL 1001' HOSE STATION ISOL.

FUME HOOD

SAMPLE RACK C-217

AS-158 REFUEL FLOOR SOUTH WALL

R.B. EL 1001' EAST WALL LAUNDRY/SNUBBER AREA ISOLATION AS-160

AS-154 REFUEL FLOOR EAST WALL

AS-156 R.B. EL. 1001' EAST WALL

NOTES:

1. SERVICE AIR IN FAB SHOP: D.C.-80Z058.

REVISIONS
80 EC 14882 DWN: JJP 1-21-10 CHK: DDW 1-25-10 APPR: AJD 1-25-10
81 EC 11006 DWN: JJP 4-29-11 CHK: DDW 4/29/11 APPR: AR 4-29-11
82 EC 18701 DWN: JJP 2-13-12 CHK: BAL 2-14-12 APPR: CLT 2-14-12
83 EC 19279 DWN: JJP 8-9-12 CHK: PEB 8-12-12 APPR: SMA 8-14-12
84 EC 21494 DWN: JJP 1-30-13 CHK: BAL 1-31-13 APPR: JOJ 2-6-13
85 EC 20237 DWN: JJP 4-8-13 CHK: BAL 4-9-13 APPR: CLT 4-9-13
86 EC 21398 DWN: JJP 4-15-13 CHK: PEB 4-15-13 APPR: BML 4-15-13
87 EC 22336 DWN: JJP 10-11-13 CHK: BAL 10-15-13 APPR: JOJ 10-23-13
88 EC 27071 DWN: JJP 5-24-16 CHK: BAL 5-24-16 APPR: JOJ 5-26-16

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-131

MONTI CAD DWG 'N'

P&ID
SERVICE AIR SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT

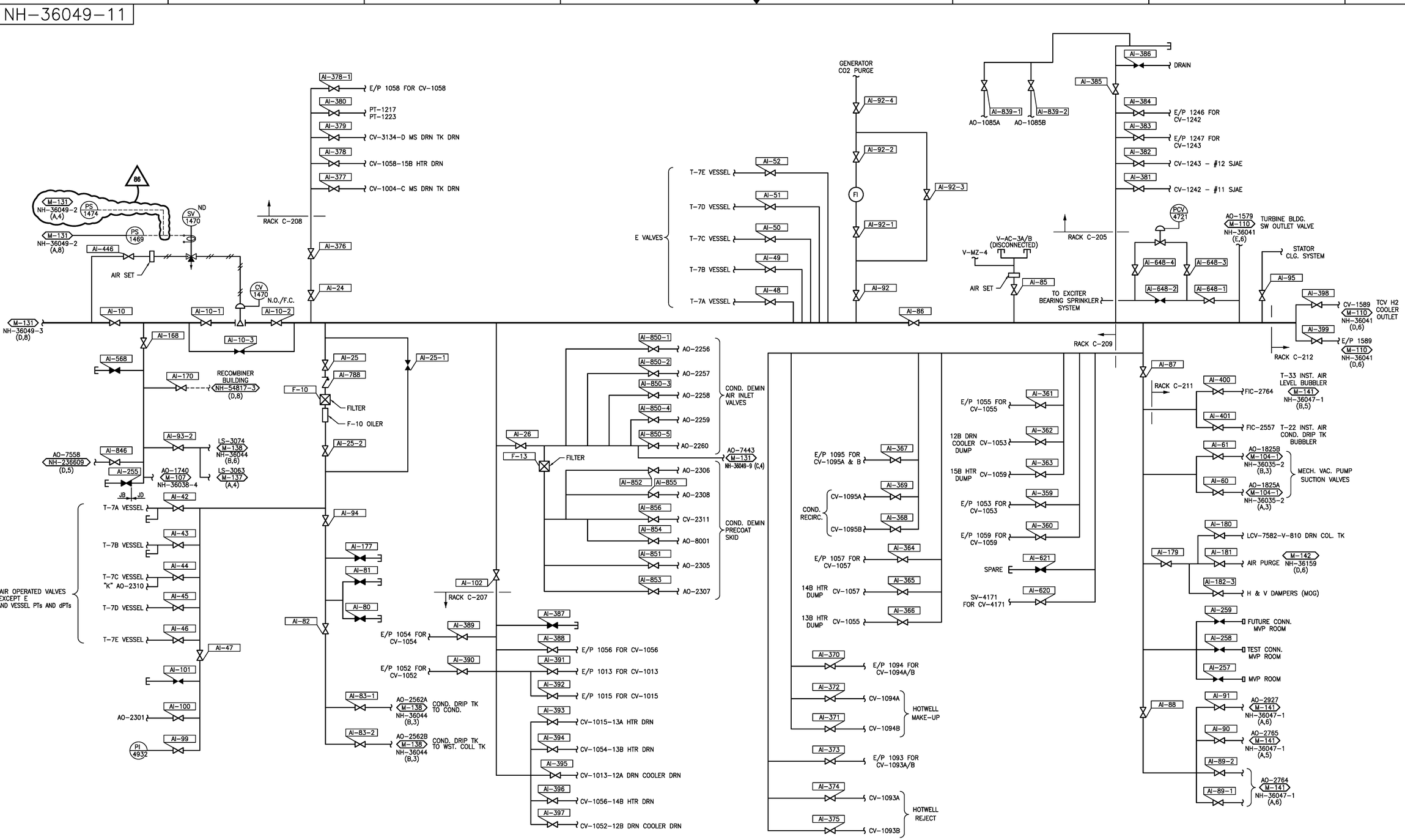
Xcel Energy® NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 88

NH-36049-4

NH-36049-11



REVISIONS
076 EC 0000000829 A/R 00886652 DWN: JJP 1-27-06 CHK: BAL 1-30-06 APPR: JCG 1-30-06
77 EC 11951 A/R 01121715 DWN: JJP 3-5-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78 EC 17612 DWN: JJP 2-18-11 CHK: BAL 2-22-11 APPR: CLT 2-28-11
79 EC 11006 DWN: JJP 4-29-11 CHK: DDW 4/29/11 APPR: AR 4-29-11
80 EC 18129 DWN: JJP 5-6-11 CHK: DDW 5-6-11 APPR: AR 5-6-11
81 EC 18171 DWN: JJP 5-18-11 CHK: DDW 5-18-11 APPR: EJS 5-18-11
82 EC 18294 DWN: JJP 6-20-11 CHK: AWL 6-20-11 APPR: DDW 6-20-11
83 EC 21453 DWN: JJP 5-7-13 CHK: AWL 5-8-13 APPR: ERN 5-10-13
84 EC 22563 DWN: JJP 8-20-13 CHK: BAL 8-20-13 APPR: TE 8-22-13
85 EC 23140 DWN: JJP 4-17-14 CHK: BAL 4-22-14 APPR: AEA 4-23-14
86 EC 6MOD00027208 DWN: NJM 8-10-17 CHK: NJF 8-11-17 APPR: AJR 8-11-17

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-131
MONTI CAD DWG "B"

P&ID
INSTRUMENT AIR - TURBINE BUILDING

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 86

NH-36049-11

NH-36049-12

REVISIONS
76 EC9741 A/R 01059540 DWN: JJP 6-18-07 CHK: BAL 6-18-07 APPR: EAN 6-20-07
77 EC11951 A/R 01121715 DWN: JJP 3-5-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78 EC14219 DWN: JJP 8-17-09 CHK: BAL 8-18-09 APPR: CLT 8-19-09
79 EC18998 DWN: JJP 10-28-11 CHK: BAL 11-1-11 APPR: KMF 11-7-11
80 EC21396 DWN: JJP 5-7-13 CHK: PEB 5-7-13 APPR: WMS 5-7-13

RX HEAD VENT CV-2372 M-115 NH-36241 (E,5)
"B" RECIRC. PUMP SEAL LEAKOFF M-117 NH-36243-1 (B,5)
RX HEAD VENT CV-2371 M-115 NH-36241 (E,5)
AI-114-2, AI-114-1, AI-114-3

80

AI-213-12, AI-213-4, 3/4", AI-214-10, AI-214-14, AI-213-8, AI-213-6, AI-213-11, AI-213-3, 1/4", AI-214-12
ACCUM T-57D, AI-217-4
ACCUM T-57H
ACCUM T-57F
AI-781, AI-13-4, AI-214-15, ACCUM T-57C, AI-214-4
SRV "D" (ADS) M-115-1 NH-36241-1 (B,4)

AI-213-5, AI-213-7, AI-213-1, AI-213-9, 1/4", AI-214-13, AI-214-9, 3/4"
ACCUM T-57E, AI-217-5
ACCUM T-57A, AI-217-1
ACCUM T-57B, AI-217-2
SRV "C" (L-L SET) M-115-1 NH-36241-1 (D,6)
ACCUM T-57G, AI-217-7
3/4", AI-214-7, AI-13-7, 1/4", AI-214-11, AI-213-10, AI-213-2

TO OUTBOARD MSIV PILOT AIR M-131 NH-36049-15 (D,7)
TO OUTBOARD MSIV INTENSIFIERS M-131 NH-36049-15 (A,4)
M-131 NH-36049-3 (D,8)
AI-41, AI-29, AI-29-1, AI-59, AI-115, AI-163, AI-116
CV-3269 M-130 NH-46162 (D,3)
CV-3440 M-130 NH-46162 (D,2)
M-118 NH-36244 (B,1)
RX 935' WEST N2 VAPORIZER

NE SV 1478, C06 HS 1478, AIR SET, AI-624, CV 1478, C06 O L C
(SEE NOTE 1) AI-571, AI-574, X-22
AI-569, AI-572, AI-570, AI-573
TO TRAIN 'A' ALT N_2 SYSTEM M-131 NH-36049-10 (D,6)
TO TRAIN 'B' ALT N_2 SYSTEM M-131 NH-36049-10 (B,6)
CV 7478, AIR SET, AI-840
NE SV 7478, C06 H L
(OPEN) PS 7392, PS 7393, PI 7394, HS 7477, (CLOSE)
AI-210, AI-211, AI-209, AI-212, REMOVEABLE SPOOL PIECE
NE SV 7477
AI-208, FI 6015, AI-206, AI-207
AI-219, AI-218, AI-205-1
LIQUID N2 TANK M-130 NH-46162 (D,2)
PI 4364, AI-205

AI-70
DW EQUIP. DRAIN SUMP RECIRC. CHECK VALVE AO-2560A & B M-138 NH-36044 (E,2)

RECIRC. SAMPLE SYS. CV-2790 M-117 NH-36243 (D,5), AI-53
ARV FLANGE LEAKOFF CHECK VALVE: CV-2370 M-115 NH-36241 (E,2), CV-2369 M-115 NH-36241 (E,3), AI-196, AI-195

80

PI, AI-182, DAMPER CONTROL C25A
AI-54-1, AI-54, "A" RECIRC. PUMP SEAL LEAKOFF M-117 NH-36243-1 (B,3)

NOTES:

1. VALVE IS 300 POUND RATING. SEE MODIFICATION PACKAGE 02Q145.

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-131
MONTI CAD DWG " C "

P&ID INSTRUMENT AIR REACTOR BUILDING & DRYWELL

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy™ NORTHERN STATES POWER COMPANY
SCALE: NONE
REV 80
NH-36049-12

NH-36049-14

REVISIONS
76 EC 8024 DWN: JJP 5-17-06 CHK: BAL 5-19-06 APPR: JCG 5-22-06
77 EC 11951 A/R 01121715 DWN: JJP 3-5-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78 EC 21396 DWN: JJP 5-7-13 CHK: PEB 5-8-13 APPR: WMS 5-8-13
79 EC 21453 DWN: JJP 5-8-13 CHK: AWL 5-8-13 APPR: ERN 5-10-13
80 EC 27714 DWN: JJP 3-27-17 CHK: AJR 3-27-17 APPR: JCG 3-28-17
81 EC 6MOD00027208 DWN: NJM 8-10-17 CHK: NJF 8-11-17 APPR: AJR 8-11-17

M-131 NH-36049-2 (A,4) | PS 1474 | M-131 NH-36049-2 (A,8) | PS 1469 | SV 1472 ND | CV 1472 NO/FC | 81

RX BLDG 935' | AI-449 | AIR SET | AI-38-1 | AI-38-2 | AI-38 | AI-38-3 | RCIC ROOM | AI-15 | M-118 NH-36244 (E,1)

M-131 NH-36049-3 (D,8)

V-AC-6 | AI-165 | M-2510 NH-161004 (A,3)

AI-237 | CV-2079 M-125 NH-36251 (C,2)
AI-236 | CV-2082A / CV-2082B M-125 NH-36251 (C,2)
AI-238 | CV-2848 / CV-2849 M-125 NH-36251 (B,5)
AI-239 | JID | JIB | AI-256 | AI-30 | M-126 NH-36252 (C,4)

AO-2381 ACTUATOR M-143 NH-36258 (C,3)

CV-3268 M-130 NH-46162 (C,4) | AI-318 | AI-316 | AI-668 | AI-317 | AI-613 | AO-2381 T-RING SEAL M-143 NH-36258 (C,3) | ACCUM

M-131 NH-36049-10 (C,6) | AI-670 | AI-669

TORUS AREA

AI-300 | AI-662 | AI-301 | AI-614 | AO-2377 T-RING SEAL M-143 NH-36258 (C,1) | ACCUM

AO-2377 ACTUATOR M-143 NH-36258 (C,2)

M-131 NH-36049-10 (A,6) | AI-664 | AI-663

AI-302 | AI-303 | AI-304 | AI-305 | AI-306 | AO-2541A / AO-2541B M-137 NH-36043 (E,2) | AO-2561A / AO-2561B M-138 NH-36044 (D,1)

AI-274-2 | C-122 | AI-274 | CAL AIR | AI-274-1 | RX BLDG 935'

M-131 NH-36049-10 (C,6) | AI-686 | AI-695

AO-2380 ACTUATOR & T-RING SEAL M-143 NH-36258 (B,2)

AI-273 | AI-685

AO-2378 T-RING SEAL M-143 NH-36258 (C,3) | AI-666 | AI-667 | M-131 NH-36049-10 (C,6)

AI-665 | AI-272 | AI-615 | ACCUM

AO-2378 ACTUATOR M-143 NH-36258 (C,3)

M-131 NH-36049-10 (C,6) | AI-684 | AI-694

AI-269 | AI-270 | AI-271 | AI-683 | CV-3267 M-130 NH-46162 (C,4) | AO-2379 ACTUATOR & T-RING SEAL M-143 NH-36258 (C,1)

SV 7956 | HS 7956 C06 | CV 7956 | C06 L O C | AIR SET | AI-262 | RING HEADER AROUND OUTSIDE TORUS

*AO-2382E | *AO-2382C | *AO-2382F | RING HEADER INSIDE TORUS | X-229B | *AO-2382G | AI-183-1 | IN TORUS BAY 10 | AI-183-2 | IN TORUS BAY 12 | *AO-2382B | *AO-2382A | *AO-2382H | *AO-2382K *CONT. ON M-143 NH-36258 (B,4)

AI-118 | AI-215 | AI-629 | AI-183 | AI-631 | AI-632 | AI-630

AO-2896 ACTUATOR M-143 NH-36258 (C,6)

AO-2896 T-RING SEAL M-143 NH-36258 (A,6) | ACCUM

AI-263 | AI-680 | AI-265 | AI-616 | AI-682 | AI-681

M-131 NH-36049-10 (A,6)

AO-2383 ACTUATOR M-143 NH-36258 (B,6)

AO-2383 T-RING SEAL M-143 NH-36258 (B,6) | AI-266 | AI-671 | AI-617 | AI-672 | ACCUM | AI-673

CV-2384 M-143 NH-36258 (A,6) | BY CV-2384 | AI-268 | AI-267

M-131 NH-36049-10 (C,6)

AI-120 | AI-119 | AO-2559 M-138 NH-36044 (E,3) | AI-121 | AI-308 | AI-307 | V-AC-7A & B | TANK RM 896'

HPCI RM | AI-123-1 | AI-245 | VENT HPCI RM C-120 | AI-14 | TO OFF-GAS STACK & STORAGE BLDG. M-142 & NH-54823-2 (D,6) | NH-36159 (C,3) | AI-246 | AI-124 | CV-3503 M-124 NH-36250 (E,4) | V-AC-8A & B

RBFDS M-137 NH-36043 (D,6) | RBEDS M-138 NH-36044 (D,6) | AI-822 | AI-128 | DRAIN HPCI ROOM | AI-819 | AI-820 | CV-2046A / CV-2046B M-123 NH-36249 (C,1) | AI-821 | AI-127 | CV-2043 M-123 NH-36249 (C,2) | AI-126 | CV-2394A / CV-2394B M-123 NH-36249 (A,4) | AI-221 | CV-2065 M-124 NH-36250 (D,4) | AI-622 | AI-125 | DRAIN HPCI ROOM

AI-122 | FIC-2540 M-137 NH-36043 (E,3) | FIC-2558 M-138 NH-36044 (D,5)

RX BLDG ABOVE 935' | M-131 NH-36049-13 (D,8)

I&C SHOP | AI-774 | ELEC. SHOP | AI-773 | AI-775 | ADMIN. BLDG. H & V | ADMIN. BLDG. | AI-275 | MG. RM. H & V | AI-319 | AI-319-1 | VD-23 TO 26,39,40 NH-158751 (C,4)

RX BLDG. EL. 985' | AI-129 | AI-129-1 | CONTROL AIR | AI-129-4 | AI-129-2 | AI-129-3 | VD-11 TO 14 NH-158751 (C,2)

AI-241 | CV-2942 M-145 NH-36881 (C,2) | AI-242 | CV-2943 M-145 NH-36881 (D,2) | AI-235 | HT-7242 (RETIRED) | AI-141 | AO-2978 M-145 NH-36881 (B,3) | AI-139 | AO-2944 M-145 NH-36881 (C,5) | AI-140 | AO-2945 M-145 NH-36881 (D,5)

STBY GAS RM. | AI-136 | AI-136-1 | AI-136-2 | AI-142 | AI-130

AI-232 | AI-231 | TEST | AI-233 | AO-2982 M-145 NH-36881 (D,6) | AI-137 | AI-138 | AO-2979 M-145 NH-36881 (E,3) | AI-234 | HT-7243 (RETIRED)

M-131 NH-36049-10 (D,6) | AI-676 | M-131 NH-36049-10 (A,6) | AI-679 | AI-675 | ACCUM | AI-678 | ACCUM

AI-276 | RWCU AREA EL. 962' | AI-131 | CV-2385 M-143 NH-36258 (C,6) | AI-134 | CV-2791 M-117 NH-36243 (E,6) | AI-674 | AI-132 | AI-618 | AO-2386 T-RING SEAL M-143 NH-36258 (D,6) | AO-2386 ACTUATOR M-143 NH-36258 (D,6)

RADWASTE PUMP & TANK RM. EL. 985' | AI-677 | AI-133 | AI-619 | AO-2387 T-RING SEAL M-143 NH-36258 (D,6) | AO-2387 ACTUATOR M-143 NH-36258 (E,6)

AI-135 | DRAIN RWCU PUMP ROOM

21 CONNECTIONS RWCU F/D VALVES & CUBICLE DAMPERS M-129 NH-36255 (A,3)

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- **QUALITY GROUP D**
- SAFETY RELATED MECHANICAL
- **SAFETY RELATED ELECTRICAL**
- **SPECIAL CONCERNS ITEM**

M-131
MONTI CAD DWG " J "

P&ID
INSTRUMENT AIR – REACTOR BUILDING

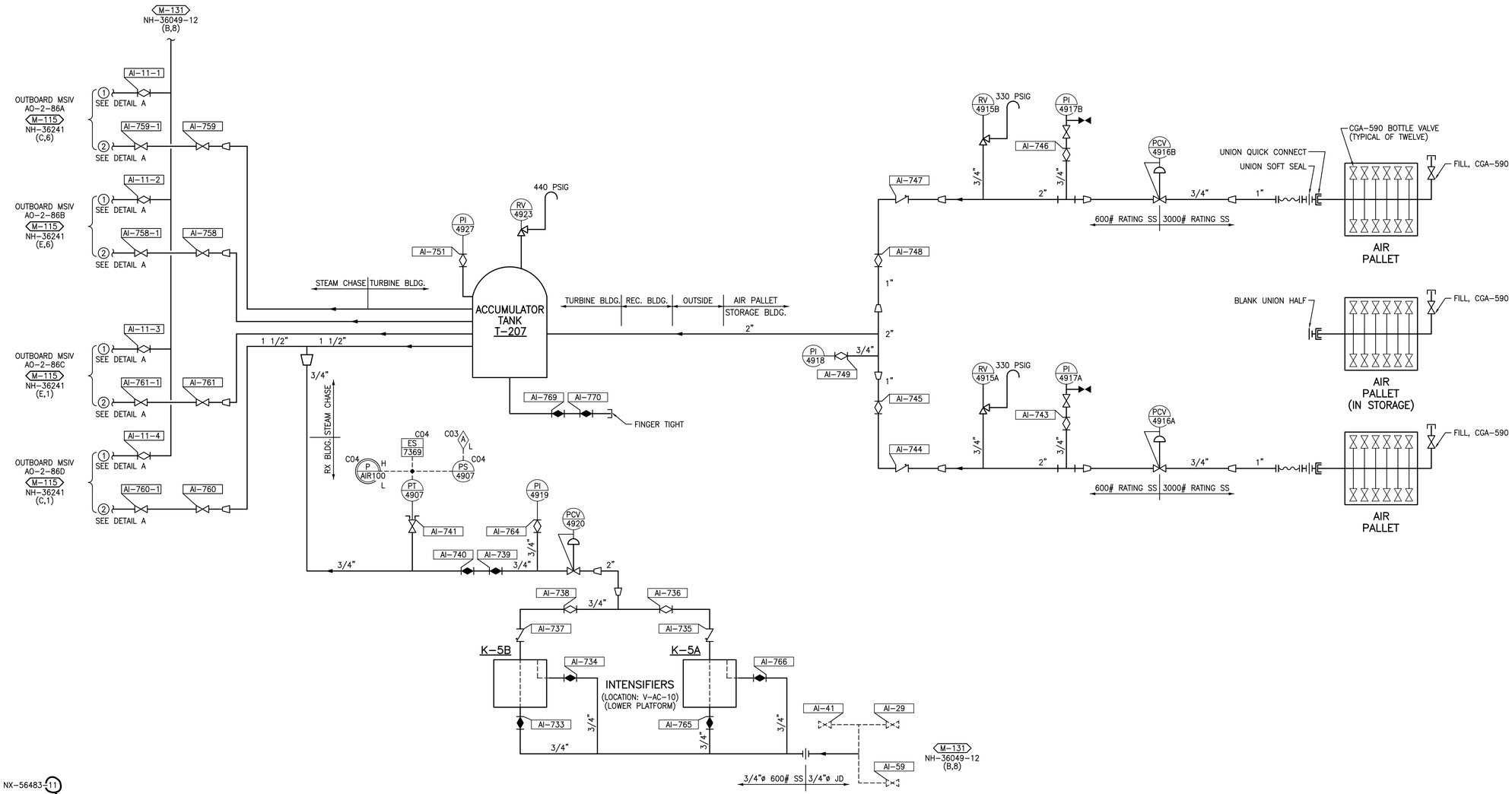
MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 81

NH-36049-14

NH-36049-15

REVISIONS
76 EC9488 A/R 01045154 DWN: JJP 11-17-06 CHK: BAL 11-17-06 APPR: JIH 11-21-06
77 EC11951 A/R 01121715 DWN: JJP 3-5-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78 EC13054 DWN: JJP 8-25-08 CHK: BAL 8-25-08 APPR: MH 8-26-08
79 EC13600 DWN: JJP 12-30-08 CHK: BAL 1-6-09 APPR: GEH 1-7-09
80 EC17025 DWN: JJP 3-17-11 CHK: BAL 3-17-11 APPR: DM 3-18-11
81 601000000981 DWN: JJP 10-24-18 CHK: 600000437501 APPR: 600000420513



DETAIL A

① PILOT AIR TO MSIV SOLENOID MANIFOLD

② MAIN AIR TO MSIV PISTON VIA MANIFOLD AIR VALVE ASSEMBLY

SEE NX-56483-11 81

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-131
MONTI CAD DWG "A"

P&ID
AIR SUPPLY TO OUTBOARD MSIV'S

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 81

NH-36049-15

Withheld Security-Related Information

Withheld Security-Related Information

Withheld Security-Related Information

Withheld Security-Related Information

Withheld Security-Related Information

Withheld Security-Related Information

Withheld Security-Related Information

Withheld Security-Related Information

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Withheld Security-Related Information

Withheld Security-Related Information

NH-36159

REVISIONS
77 EC12513 A/R 01121399 DWN: JJP 6-25-08 CHK: BAL 6-26-08 APPR: BJR 6-26-08
78 EC12835 DWN: JJP 7-15-08 CHK: BAL 7-21-08 APPR: ERF 7-21-08
79 EC14626 DWN: JJP 8-5-09 CHK: BAL 8-6-09 APPR: SRR 8-26-09
80 EC21222 DWN: JJP 12-6-12 CHK: BAL 12-10-12 APPR: CLT 12-10-12
81 601000000870 DWN: JJP 8-9-18 CHK: BAL 8-9-18 APPR: JPC 8-9-18

OFF-GAS SAMPLE RACK 17-116

TI 7155 · FI 7154 · HEATER · HS · PI 7156 · PI 7157 · dPS 7158 · PI 7733 · PI 7732 · PI 7159 · PI 7160

OFF-GAS SAMPLE SYSTEM C04 A L

INST AIR FROM M-131 NH-36049-11 (B,2)

OG-9 · OG-183 · OG-180 · OG-179 · OG-182 · OG-181 · OG-178 · OG-10 1/2"-112TM3

PCV-7578 · PCV-7577 · FIC-7578 · AI-838

OG29-1/2"-HC

RR21-1/2" (SS TUBING)

SAMPLE CHAMBER 17-104

C04 A L · C04 A H · C · C02 RR 4902 · C10 RM 17-150A · C10 RM 17-150B · C10 RM 17-151 · RE 17-130A · RS 17-355 · RE 17-130B · RE 17-131 · RR22-1/2" · RR24-1/2" · RR23-1/2"

TIMER EMERG. 30 MIN. TIMER TDR-3 · C252A A H

AIR EJECTOR HIGH RADIATION TRIPS M-104-1 NH-36035-2 (B,4;D,4)

HC HS · 18" MIN · 3/4"-130M3 · OG-8-1 · LOOP SEAL · RR51-1/4" · HC EF · OG-8-3

OG-8 3/4"-130M3 · RR25-3/4" x 6" x 3/4" REDUCING FLANGE · RR25-1/2"

1/2" O.D. x .049" WALL SS TUBING

TO DRAIN TANK V-810 · CNE-128-1"-HN2C FROM RECOMBINER SYSTEM NH-54817-4 (B,1)

GOLE-111-6"-HN2C

OFF-GAS VIAL SAMPLER BOX 17-136

OG-11 1/2"-112TM3 · RR27-1/2" · RR27-1/4 · MOISTURE SEPARATOR · RR26-1/2" · OG-8-5 · RR26-3/8" · OG-8-4

OFF-GAS VIAL SAMPLER CONTROL PANEL 17-137

HS · SV 3 · SV 1 · SV 4 · SV 2 · L

HYPODERMIC NEEDLE · SAMPLE BOTTLE

OG-17 3/4"-223 · OG-18 3/4"-19 · OG-17 INTERNALS HAVE BEEN REMOVED · 81

TO AIR EJECTORS E-2B DISCHARGE M-104-1 NH-36035-2 (B,3)

OG30-1"-ED · ED HC

TO MAIN CONDENSER E-1B M-104 NH-36035 (D,5)

OG29-1"-HC

OG-16 1"-19 · OG-15 3/4"-19 · OG-14 3/4"-223

EF HC · VACUUM PUMP 17-106 · OG29-1/2"-HC · OG-8-6 · OG-17-1 · OG-12 1/2"-112TM3 · MOISTURE DETECTION FLASK · OG-13 1/2"-112TM3

OG29-1/2"-HC

HPCI TURBINE OFF-GAS M-123 NH-36249 (B,2) · OG24-3"-HC · SLOPE

STEAM PACKING EXHAUSTER DISCHARGE M-103 NH-36034 (E,1) · OG5-10"-HC · SLOPE

CONDENSER VACUUM PUMP DISCHARGE M-104-1 NH-36035-2 (B,1) · OG6-10"-HC · SLOPE

FROM STANBY GAS TREATMENT SYSTEM M-145 NH-36881 (C,1) · OG27 (18" DUCT) · GALVANIZED STEEL DUCT · HC · SLOPE · OG27-18"-HC

DILUTION AIR SUPPLY M-145 NH-36881 (F,1) · M-155 NH-36267 (A,3)

REACTOR BLDG.

OFF-GAS STORAGE BLDG. DILUTION AIR SUPPLY NH-51142-1

AIR EJECTOR HOLDUP LINE (30 MIN.) 42" ø · LIQUID RETURN FROM STORAGE BLDG. NH-54823-2 (D,8) · SLOPE 1/16"/ft

STEAM PACKING HOLDUP LINE (1.75 MIN.) 42" ø · SLOPE 1/16"/ft

TO OFF-GAS STORAGE NH-54823-2 (D,8)

OG-7-1 · BLANKING PLATE · FROM OFF-GAS STORAGE NH-54823-2 (D,6)

OG-7-2 2"-19 · OG-7-3 2"-19 · OG-7-4 · OG-7-5 1/2" WHITEY 43S4 · OG-7-6 1/2" WHITEY 43S4 · OG-7-7 1/2"-19M3 · OG-7-8 1/2"-19M3 · 8D · 1/2" O.D. S.S. TUBING ED

SMOKE INJECTION · FILTER SAMPLE

AIR EJECTOR OFF-GAS FILTERS

11 F-3A · 12 F-3B · dPIS 1926 · C07 A H

OG-6-1 6"-N14 · OG-6-2 6"-N14 · OG-5-1 6"-N14 · OG-5-2 6"-N14 · 6"-ED · 2"-ED

OG3-6"-ED · OG3-8"-ED · OG30-1"-ED · OG-35 1"-19 · OG-36 2"-19

OFF-GAS STACK

14" DIA. PIPE · 18" DIA. .250 WALL PIPE A-358 TYPE 304 S.S. CLASS I (TYP.)

STACK WRGM's · C02 HS 17A-S5

ISOKINETIC PROBE ASSY. · SPS 8000H-1 · SPS 8000H-2 · STRAIGHTENING VANES · BAFFLE PLT. · 60

M-142 NH-36159-2 (C,8) · M-142 NH-36159-3 (C,8)

N.D. SV 2353 · N.D. SV 1928 · QUICK DISCONNECT INSTALLED · AI-791-2 · AI-65 · AI-62 · AI-791 · AI-791-1 · AI-63 · AI-64

FROM PLANT M-131 NH-36049-14 (A,6)

SLOPE · OG5-14"-HC · ED EF · HC HJ · 10" · 1 1/2" · OG-34 1 1/2"-19 · HC ED · CV 2353 · C07 O C

FS 8000-J11 · FS 8000-J12 · 18" · VD-8000-J11 · VD-8000-J12 · A C-20 FAN TROUBLE · L A C-24 LOW FLOW

V-EF-18A 3311 11 · V-EF-18B 4311 12 · STAND-BY CONTROL · C242A C242B

VD-8000-J29 · VD-8000-J30 · C24B HS 2981 · C24A HS 2980 · OFF-GAS DILUTION FANS

CV 1928 · C07 O C · 6" · ED 3E ED · SEE NOTE 6

JB ED · DW27-1 1/2"-JB · DEMINERALIZED WATER · STACK FAN ROOM · DM-87 · M-112 NH-36664 (D,4)

DM-100 3/4"-130 · DM-101 3/4"-130 · STACK HOSE STATION · STACK PIPE VAULT

D30-1"-ED · D31-1 1/2"-ED

NOTES:

1. SLOPE 1/8" PER FOOT UNLESS OTHERWISE INDICATED.
2. DEPTH OF LOOP SEALS TO BE A MINIMUM OF 36".
3. AIR SUPPLY TO STACK SAMPLE STATION.....AI-65
4. AIR SUPPLY TO STACK STOP.....AI-62
5. AIR SUPPLY TO STACK DILUTION FAN DAMPERS.....AI-64
6. VENDOR DRAWING NX-9288-14

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-142

MONTI CAD DWG 'P'

P&ID
OFF-GAS SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy® NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 81

NH-36159

NH–36159–2

REVISIONS
76 EC11951 A/R 01121715 DWN: JJP 3–5–08 CHK: BJR 3–11–08 APPR: RMG 3–12–08
77 EC20719 DWN: JJP 3–8–13 CHK: BAL 3–11–13 APPR: BJR 3–13–13
78 EC27040 DWN: JJP 10–11–16 CHK: BAL 10–17–16 APPR: AJW 10–17–16

STATION VENT

ISOKINETIC SAMPLER

M–142
NH–36159
(D,2)

OFF GAS STACK

3/4 O.D. TUBING

RY–7858A

SGM–1–1

PREFILTERS (TYPICAL)

SGM–5–1 SGM–11–1 "B" PART. I2 SGM–17–1 SGM–23–1 SV 4798A

SGM–3–1 SGM–9–1 "A" PART. I2 SGM–15–1 SGM–21–1 SV 4797A

SGM–7–1 SGM–13–1 PART. I2 SGM–19–1 SGM–25–1 SV 4796A

GRAB SAMPLE HIGH FLOW (LOW RADIATION)

COMPRESSED AIR FITTING (FOR BACKFLOW THROUGH ISOKINETIC SAMPLER)

4 π LEAD SHIELDING (TYPICAL)

PREFILTERS (TYPICAL)

1/4 O.D. TUBING

SGM–2–1

SGM–6–1 SGM–12–1 "D" PART. I2 SGM–18–1 SGM–24–1 SV 4799A

SGM–4–1 SGM–10–1 "C" PART. I2 SGM–16–1 SGM–22–1 SV 4800A

SGM–8–1 SGM–14–1 PART. I2 SGM–20–1 SGM–26–1 SV 4801A

GRAB SAMPLE LOW FLOW (HIGH RADIATION)

SAMPLE CONDITIONING SKID

1/2 O.D. TUBING

LOW PRESSURE CLEAN DRY PURGE GAS

PURGE VALVE

SV 4803A

SV 4802A

MO 4806A

FLOW CONTROL VALVE

1/4 O.D. TUBING

LOW PRESSURE CLEAN DRY PURGE GAS

SV 4805A

SV 4804A

MO 4807A

FLOW CONTROL VALVE

RM–7858A
(SEE DWG. NX–7993–3–7)

FROM RM 80

UNDER RM 80 CONTROL

CHECK SOURCE UNDER RM 80 CONTROL

RE–7858A–LOW

RD52

P–138A
2.0 SCFM PUMP HIGH FLOW (LOW RADIATION)

LOW GAS & BACKGROUND DETECTOR

F M

F T

FT–7201A–1

TO RM 80

SGM–34–1 SGM–27–1

MASS FLOW METER (0–5V DC)

UNDER RM 80 CONTROL

DETECTOR FILTER

MID/HIGH GAS DETECTOR

RD72 RD72

RE–7858A–MID

RE–7858A–HIGH

P–139A
0.06 SCFM PUMP LOW FLOW (HIGH RADIATION)

CHECK SOURCES UNDER RM 80 CONTROL

F M

F T

FT–7200A–1

TO RM 80

SGM–35–1 SGM–28–1

SGM–29–1

SAMPLE DETECTION SKID

SGM–30–1

SGM–32–1

78

FI–7156

SX 1772 GAS GRAB SAMPLE INLET

SGM–31–1

SGM–33–1

78

SX 1773 GAS GRAB SAMPLE OUTLET

RETURN TO STACK

3/4 O.D. TUBING

OFF GAS STACK WIDE RANGE GAS MONITOR CHANNEL "A"

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

This map/document is 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.

M–142
MONTI CAD DWG 'B'

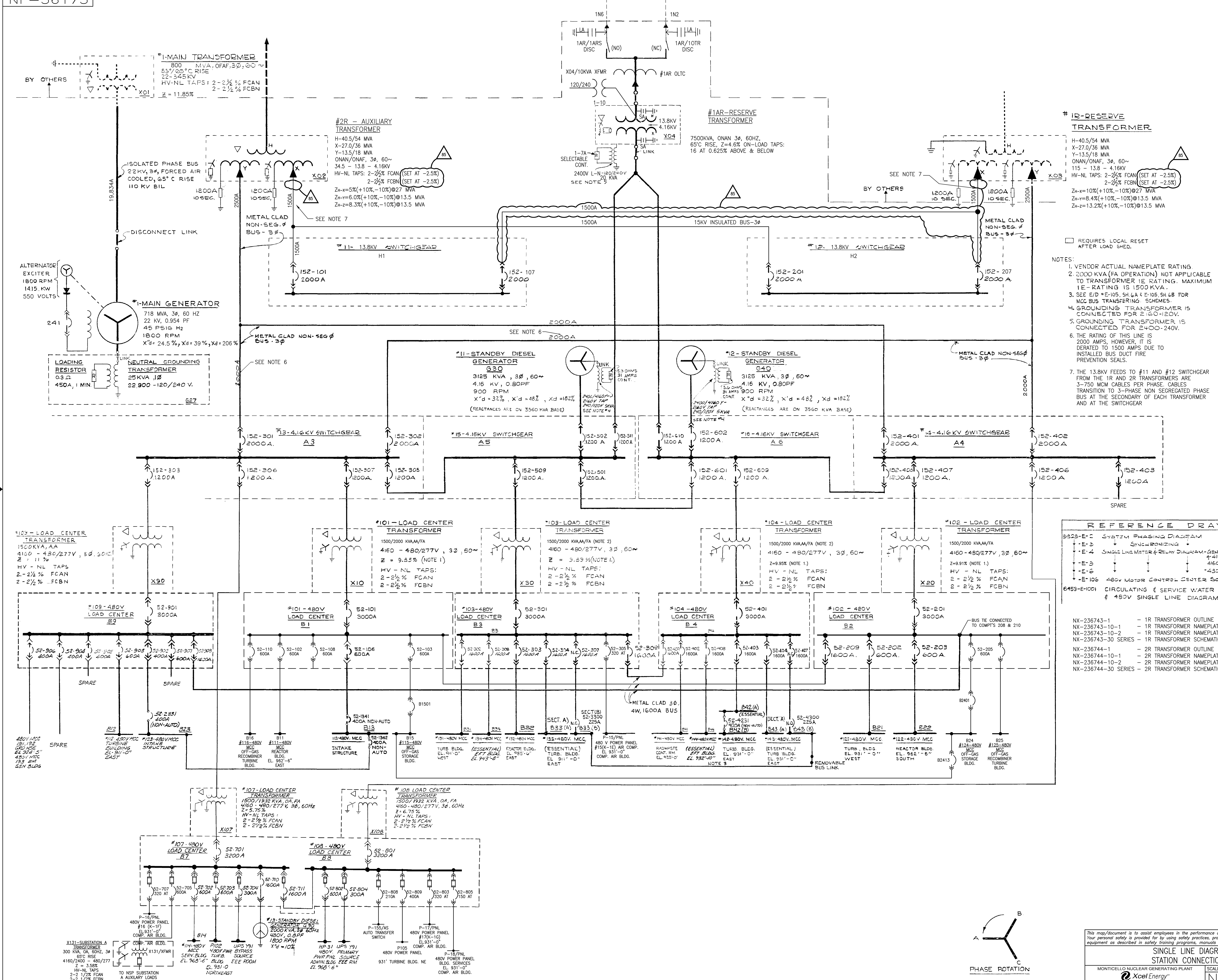
OFF GAS STACK
GAS MONITOR CH. 'A'

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy®
NORTHERN STATES POWER COMPANY

SCALE: NONE REV 78

NH–36159–2

NF-36175



REVISIONS

Rev	EC	Approvals
76	EC906	DWN: JJP 7-9-07; CHK: AJM 7-12-07; APPR: JN 7-12-07
77	EC11129	DWN: JJP 4-20-09; CHK: DDW 4-20-09; APPR: KNM 4-27-09
78	EC13612	DWN: JJP 6-29-09; CHK: DDW 6-30-09; APPR: GW 6-30-09
79	EC14882	DWN: JJP 9-15-09; CHK: DDW 9-16-09; APPR: BML 9-17-09
80	EC14882	DWN: JLL 1-22-10; CHK: DDW 1-25-10; APPR: AJD 1-25-10
81	EC17915	DWN: JJP 4-11-11; CHK: BAL 4-11-11; APPR: RES 4-11-11
82	EC12332/11018	DWN: GDK/BAT 5-1-11; CHK: AML 5-2-11; APPR: EJS 5-3-11
83	EC18682/21158	DWN: BAT 3-28-13; CHK: SMA 3/28/13; APPR: EPW 3/29/13
84	EC21152/21159	DWN: BAT 5-30-13; CHK: CTP 5-31-13; APPR: AML 6-2-13
85	EC21160	DWN: BAT 6-9-13; CHK: MLM 6-9-13; APPR: JAA 6-10-13

☐ REQUIRES LOCAL RESET AFTER LOAD SHED.

NOTES:

1. VENDOR ACTUAL NAMEPLATE RATING
2. 2000 KVA (FA OPERATION) NOT APPLICABLE TO TRANSFORMER 1E RATING. MAXIMUM 1E-RATING IS 1500 KVA.
3. SEE E/D #E-105, SH.6A & E-105, SH.6B FOR MCC BUS TRANSFERING SCHEMES.
4. GROUNDING TRANSFORMER IS CONNECTED FOR 2160-120V.
5. GROUNDING TRANSFORMER IS CONNECTED FOR 2400-240V.
6. THE RATING OF THIS LINE IS 2000 AMPS, HOWEVER, IT IS DERATED TO 1500 AMPS DUE TO INSTALLED BUS DUCT FIRE PREVENTION SEALS.
7. THE 13.8KV FEEDS TO #11 AND #12 SWITCHGEAR FROM THE 1R AND 2R TRANSFORMERS ARE 3-750 MCM CABLES PER PHASE. CABLES TRANSITION TO 3-PHASE NON SEGREGATED PHASE BUS AT THE SECONDARY OF EACH TRANSFORMER AND AT THE SWITCHGEAR

REFERENCE DRAWINGS

- 5828-E-2 SYSTEM PHASING DIAGRAM
- -E-3 SYNCHRONIZING
- -E-4 SINGLE LINE METER & RELAY DIAGRAM-GEN, AUX. TRANSFORMER, 4160V SYSTEM BUSES 11-16, 4160V SYSTEM BUSES 13-16
- -E-5 -480V SYSTEM
- -E-6
- -E-106 480V MOTOR CONTROL CENTER SCHEDULE
- 6453-E-1001 CIRCULATING & SERVICE WATER SYSTEM 4160V & 480V SINGLE LINE DIAGRAM

Drawing	Description
NX-236743-1	1R TRANSFORMER OUTLINE
NX-236743-10-1	1R TRANSFORMER NAMEPLATE
NX-236743-10-2	1R TRANSFORMER NAMEPLATE
NX-236743-30 SERIES	1R TRANSFORMER SCHEMATICS
NX-236744-1	2R TRANSFORMER OUTLINE
NX-236744-10-1	2R TRANSFORMER NAMEPLATE
NX-236744-10-2	2R TRANSFORMER NAMEPLATE
NX-236744-30 SERIES	2R TRANSFORMER SCHEMATICS

This map/document is 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.

E-1

MONTI CAD DWG "V"

SINGLE LINE DIAGRAM
STATION CONNECTIONS

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy

SCALE: NONE | REV 85

NF-36175

NH-36241

REVISIONS	
87	EC25567 DWN: JJP 4-21-15 CHK: BAL 4-24-15 APPR: ALR 4-24-15
88	EC25929 DWN: JJP 5-25-16 CHK: BAL 5-25-16 APPR: AJW 5-25-16
89	601000000981 DWN: JJP 10-24-18 CHK: 600000437501 APPR: 600000420513
90	601000000402 DWN: JJP 4-15-19 CHK: 600000528282 APPR: 600000282935

REACTOR VESSEL R-200 (2-1)

INSIDE OF DRYWELL

REFUELING SEAL

NUCLEAR BOILER INSTRUMENTATION M-116 NH-36242 (E,4)

LOW PRESSURE FLANGE LEAKOFF (PIPED TO POINT IN DRYWELL ACCESSIBLE DURING SHUTDOWN)

HIGH PRESSURE FLANGE LEAKOFF

TE2-113A – APR100
TE2-113B – APR101
TE2-113C – APR102
TE2-113D – APR103
TE2-113E – APR104
TE2-113F – APR105
TE2-113G – APR106
TE2-113H – APR107

NOTES:

1. MATERIAL CHANGES PER D.C. 81M010 PIPE MATERIAL FROM FEEDWATER NOZZLE SAFE ENDS TO FIRST UPSTREAM ELBOW AND FROM ELBOW TO FIRST WELD UPSTREAM OF ELBOW IS SCH. 80, SA-333, GRADE 6, ELBOW MATERIAL IS SCH. 80, SA-420-WPL6.

   FOR REFERENCE DRAWING LIST AND GENERAL NOTES SEE P&ID DRAWING No. M-100.
   FOR REACTOR VESSEL INSTRUMENTATION SEE P&ID DWG. No. M-116.
   FOR REACTOR RECIRCULATION LOOPS SEE P&ID DWG. No. M-117.

2. PER AR 01385794 VERIFY MATERIAL FOR VALVE XDV-2 AT NEXT AVAILABLE OPPORTUNITY AND RECONCILE IF NECESSARY WITH EXISTING HARDWARE CONFIGURATION.

REFERENCE DRAWINGS:

1. FEEDWATER CONTROL SYSTEM NX-7832-14
2. IED PROCESS RADIATION MONITORING SYSTEM ..... NX-7993-1-1 & 1-2 & NX-7993-3-4
3. IED REACTOR PROTECTION SYSTEM ..... NX-7834-1 & NX-7834-2-2
4. SCHEMATIC CONTROL DIAGRAM, INBOARD MSIV's NX-7831-446
5. LOW LOW SET P&ID NH-36241-1 (M-115-1)
6. PNUEMATIC AND HYDRAULIC CONTROL CIRCUIT SCHEMATIC, OUTBOARD MAIN STEAM ISOLATION VALVES NX-56483-11
7. STEAM JET AIR EJECTORS NH-36035-2 (M-104-1)
8. IED PRIMARY CONTAINMENT ISOLATION ..... NX-7823-4-17, -4-4 & -4-5

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-115
MONTI CAD DWG "AF"

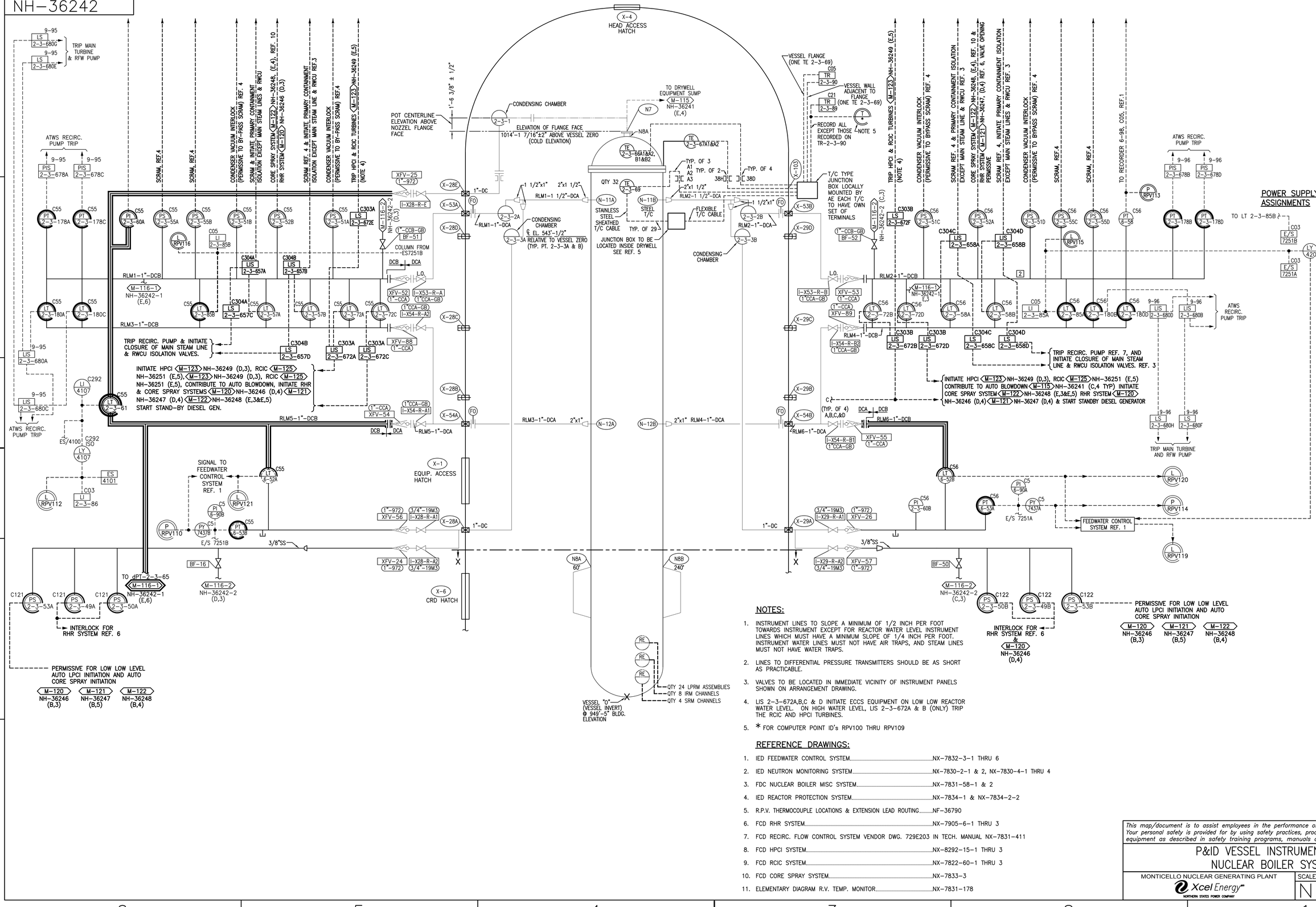
NUCLEAR BOILER SYSTEM-STEAM SUPPLY P & ID

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy®
NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 90

NH-36241

NH-36242



NOTES:

1. INSTRUMENT LINES TO SLOPE A MINIMUM OF 1/2 INCH PER FOOT TOWARDS INSTRUMENT EXCEPT FOR REACTOR WATER LEVEL INSTRUMENT LINES WHICH MUST HAVE A MINIMUM SLOPE OF 1/4 INCH PER FOOT. INSTRUMENT WATER LINES MUST NOT HAVE AIR TRAPS, AND STEAM LINES MUST NOT HAVE WATER TRAPS.
2. LINES TO DIFFERENTIAL PRESSURE TRANSMITTERS SHOULD BE AS SHORT AS PRACTICABLE.
3. VALVES TO BE LOCATED IN IMMEDIATE VICINITY OF INSTRUMENT PANELS SHOWN ON ARRANGEMENT DRAWING.
4. LIS 2-3-672A,B,C & D INITIATE ECCS EQUIPMENT ON LOW LOW REACTOR WATER LEVEL. ON HIGH WATER LEVEL, LIS 2-3-672A & B (ONLY) TRIP THE RCIC AND HPCI TURBINES.
5. * FOR COMPUTER POINT ID's RPV100 THRU RPV109

REFERENCE DRAWINGS:

1. IED FEEDWATER CONTROL SYSTEM ..... NX-7832-3-1 THRU 6
2. IED NEUTRON MONITORING SYSTEM ..... NX-7830-2-1 & 2, NX-7830-4-1 THRU 4
3. FDC NUCLEAR BOILER MISC SYSTEM ..... NX-7831-58-1 & 2
4. IED REACTOR PROTECTION SYSTEM ..... NX-7834-1 & NX-7834-2-2
5. R.P.V. THERMOCOUPLE LOCATIONS & EXTENSION LEAD ROUTING NF-36790
6. FCD RHR SYSTEM ..... NX-7905-6-1 THRU 3
7. FCD RECIRC. FLOW CONTROL SYSTEM VENDOR DWG. 729E203 IN TECH. MANUAL NX-7831-411
8. FCD HPCI SYSTEM ..... NX-8292-15-1 THRU 3
9. FCD RCIC SYSTEM ..... NX-7822-60-1 THRU 3
10. FCD CORE SPRAY SYSTEM NX-7833-3
11. ELEMENTARY DIAGRAM R.V. TEMP. MONITOR NX-7831-178

REVISIONS
76 EC 7462 DWN: JJP 4-3-07 CHK: BAL 4-24-07 APPR: JSO 4-24-07
77 EC 11951 A/R 01121715 DWN: JJP 3-5-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78 EC 15277 DWN: JJP 12-10-09 CHK: BAL 12-10-09 APPR: KAB 12-11-09
79 EC 18820 DWN: JJP 10-6-11 CHK: BAL 10-6-11 APPR: BL 10-6-11
80 EC 18580 DWN: JJP 5-13-13 CHK: PEB 5-13-13 APPR: BJR 5-13-13
81 EC 25011 PAGE 3 ADDED TO .PDF DOC. DWN: JJP 1-28-15 CHK: BAL 1-28-15 APPR: RAD 1-28-15

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-116
MONTI CAD DWG "AG"

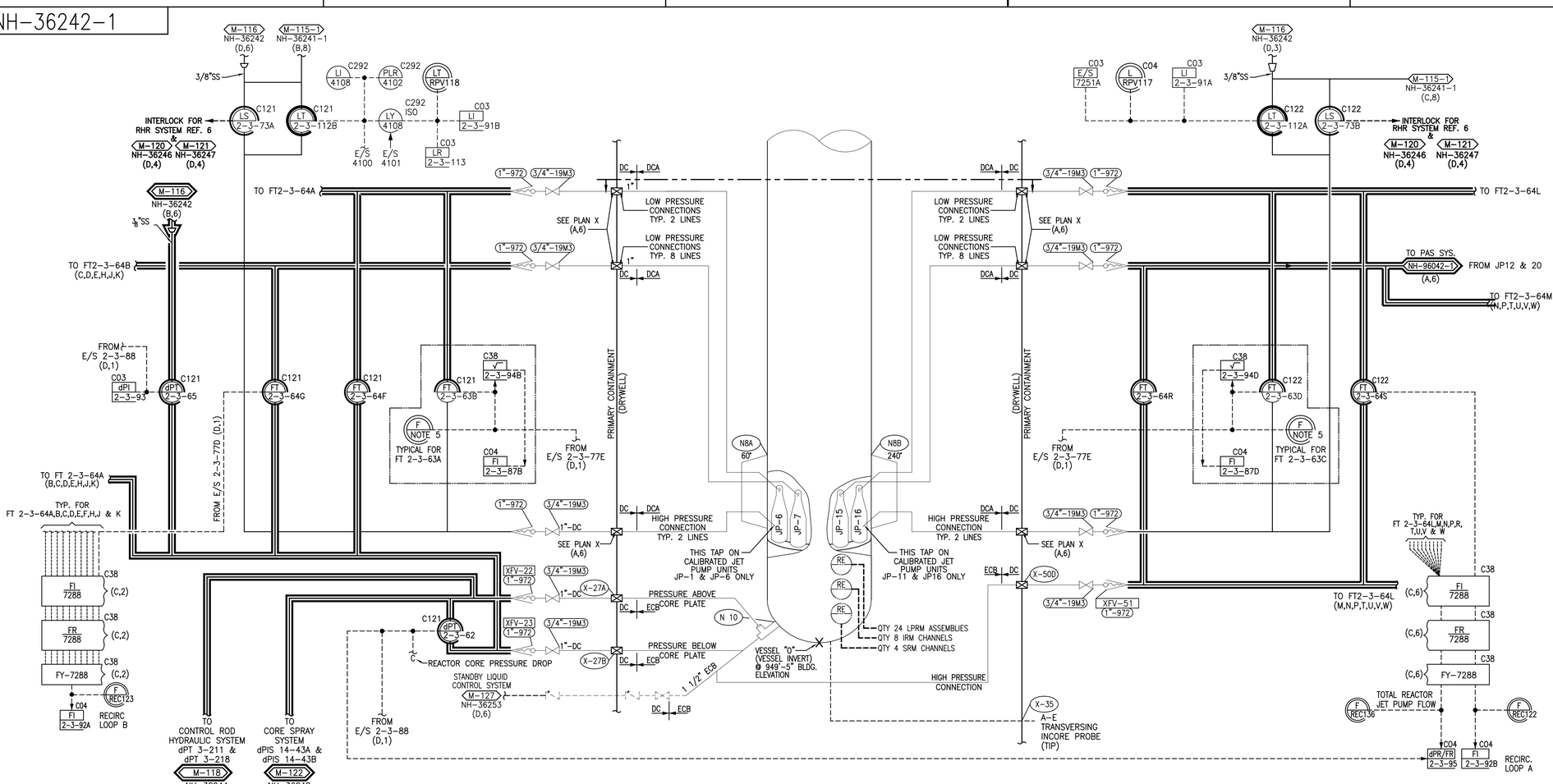
P&ID VESSEL INSTRUMENTATION NUCLEAR BOILER SYSTEM

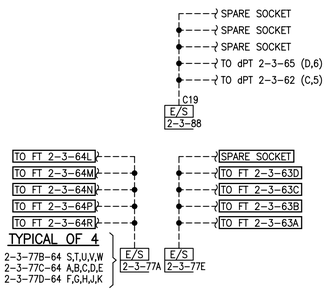
MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 81

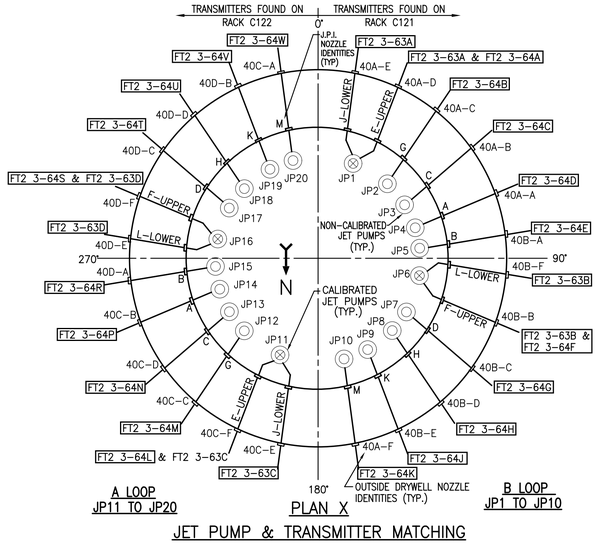
NH-36242

NH-36242-1





POWER SUPPLY ASSIGNMENTS



A LOOP JP11 TO JP20

PLAN X

B LOOP JP1 TO JP10

JET PUMP & TRANSMITTER MATCHING

(SEE NOTE 6 FOR TABLE EXPLANATION)

JP INST. LINE PENETRATION TO EXCESS FLOW CHECK VALVE (XFV) TABLE

PEN.	XFV	PEN.	XFV
X-40A-A	XFV-27	X-40C-D	XFV-42
X-40A-B	XFV-28	X-40C-E	XFV-43
X-40A-C	XFV-29	X-40C-F	XFV-44
X-40A-D	XFV-30	X-40D-A	XFV-45
X-40A-E	XFV-31	X-40D-B	XFV-46
X-40A-F	XFV-32	X-40D-C	XFV-47
X-40B-A	XFV-33	X-40D-D	XFV-48
X-40B-B	XFV-34	X-40D-E	XFV-49
X-40B-C	XFV-35	X-40D-F	XFV-50
X-40B-D	XFV-36		
X-40B-E	XFV-37		
X-40B-F	XFV-38		
X-40C-A	XFV-39		
X-40C-B	XFV-40		
X-40C-C	XFV-41		

NOTES:

1. INSTRUMENT LINES TO SLOPE A MINIMUM OF 1/2 INCH PER FOOT TOWARDS INSTRUMENT EXCEPT FOR REACTOR WATER LEVEL INSTRUMENT LINES WHICH MUST HAVE A MINIMUM SLOPE OF 1/4 INCH PER FOOT. INSTRUMENT WATER LINES MUST NOT HAVE AIR TRAPS, AND STEAM LINES MUST NOT HAVE WATER TRAPS.
2. LINES TO DIFFERENTIAL PRESSURE TRANSMITTERS SHOULD BE AS SHORT AS PRACTICABLE.
3. VALVES TO BE LOCATED IN IMMEDIATE VICINITY OF INSTRUMENT PANELS SHOWN ON ARRANGEMENT DRAWING.
4. ALL INSTRUMENT LINES FROM JET PUMPS 1 TO 10 EXIT THRU PENETRATIONS N8A & X-40AB, LINES 11 TO 20 EXIT THRU PENETRATIONS N8B & X-40CD. SEE PLAN X.
5. FT 2-3-63A -- COMPUTER POINT REC142
   FT 2-3-63B -- COMPUTER POINT REC143
   FT 2-3-63C -- COMPUTER POINT REC144
   FT 2-3-63D -- COMPUTER POINT REC145
6. X PREFIX IS NOT SHOWN FOR PENETRATIONS ON PLAN X

REFERENCE DRAWINGS:

1. IED FEEDWATER CONTROL SYSTEM ..... NX-7832-3-1 THRU 6
2. IED NEUTRON MONITORING SYSTEM ..... NX-7830-2-1 & 2, NX-7830-4-1 THRU 4
3. FDC NUCLEAR BOILER MISC SYSTEM ..... NX-7831-58-1 & 2
4. IED REACTOR PROTECTION SYSTEM ..... NX-7834-1 & NX-7834-2-2
5. R.P.V. THERMOCOUPLE LOCATIONS & EXTENSION LEAD ROUTING NF-36790
6. FCD RHR SYSTEM ..... NX-7905-6-1 THRU 3
7. FCD RECIRC. FLOW CONTROL SYSTEM VENDOR DWG. 729E203 IN TECH. MANUAL NX-7831-411
8. FCD HPCI SYSTEM ..... NX-8292-15-1 THRU 3
9. FCD RCIC SYSTEM ..... NX-7822-60-1 THRU 3
10. FCD CORE SPRAY SYSTEM NX-7833-3
11. ELEMENTARY DIAGRAM R.V. TEMP. MONITOR NX-7831-178

REVISIONS

76	EC 7462 DWN: JJP 4-3-07 CHK: BAL 4-24-07 APPR: JSO 4-24-07
77	EC 11951 A/R 01121715 DWN: JJP 3-5-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
78	EC 15557 DWN: BAT 4-3-11 CHK: DDW 4-6-11 APPR: VJK 4-7-11
79	EC 12331 DWN: JJP 6-12-12 CHK: PEB 6-21-12 APPR: EPW 8-2-12
80	EC 21613 DWN: JJP 3-1-13 CHK: SLM 3-1-13 APPR: PEB 3-1-13
81	EC 25011 PAGE 3 ADDED TO .PDF DOC. DWN: JJP 1-28-15 CHK: BAL 1-28-15 APPR: RAD 1-28-15

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-116-1
MONTI CAD DWG " A "

P & ID JET PUMP INSTRUMENTATION
NUCLEAR BOILER SYSTEM

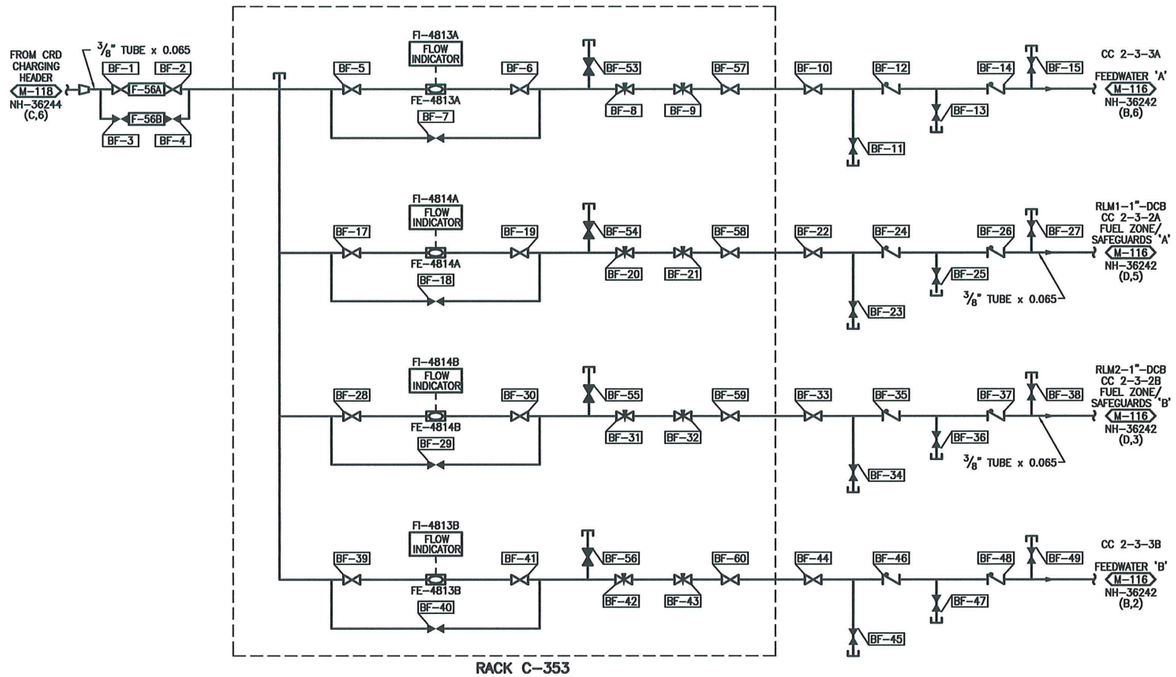
MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy™ NORTHERN STATES POWER COMPANY

SCALE: NONE REV 81

NH-36242-1

NH-36242-2

REVISIONS
76 EC11951
A/R 01121715
DWN: JJP 3-5-08
CHK: BJR 3-11-08
APPR: RMG 3-12-08



NOTES:

1. INSTRUMENT LINES TO SLOPE A MINIMUM OF 1/2 INCH PER FOOT TOWARDS INSTRUMENT EXCEPT FOR REACTOR WATER LEVEL INSTRUMENT LINES WHICH MUST HAVE A MINIMUM SLOPE OF 1/4 INCH PER FOOT. INSTRUMENT WATER LINES MUST NOT HAVE AIR TRAPS, AND STEAM LINES MUST NOT HAVE WATER TRAPS.
2. LINES TO DIFFERENTIAL PRESSURE TRANSMITTERS SHOULD BE AS SHORT AS PRACTICABLE.
3. VALVES TO BE LOCATED IN IMMEDIATE VICINITY OF INSTRUMENT PANELS SHOWN ON ARRANGEMENT DRAWING.

REFERENCE DRAWINGS:

1. IED FEEDWATER CONTROL SYSTEM.....NX-7832-3-1 THRU 6
2. IED NEUTRON MONITORING SYSTEM.....NX-7830-2-1 & 2, NX-7830-4-1 THRU 4
3. FDC NUCLEAR BOILER MISC SYSTEM.....NX-7831-58-1 & 2
4. IED REACTOR PROTECTION SYSTEM.....NX-7834-1 & NX-7834-2-2
5. R.P.V. THERMOCOUPLE LOCATIONS & EXTENSION LEAD ROUTING.....NF-36790
6. FCD RHR SYSTEM.....NX-7905-6-1 THRU 3
7. FCD RECIRC. FLOW CONTROL SYSTEM VENDOR DWG. 729E203 IN TECH. MANUAL NX-7831-411
8. FCD HPCI SYSTEM.....NX-8292-15-1 THRU 3
9. FCD RCIC SYSTEM.....NX-7822-60-1 THRU 3
10. FCD CORE SPRAY SYSTEM.....NX-7833-3
11. ELEMENTARY DIAGRAM R.V. TEMP. MONITOR.....NX-7831-178

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

This map/document is 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.

M-116-2
MONTI CAD DWG 'A'

SIGNIFICANT NUMBER	8700	--	RX	1	– 4420	1	–
GROUP	1	2	3	4	5	CL	6

MONTICELLO NUCLEAR GENERATING PLANT UNIT 1

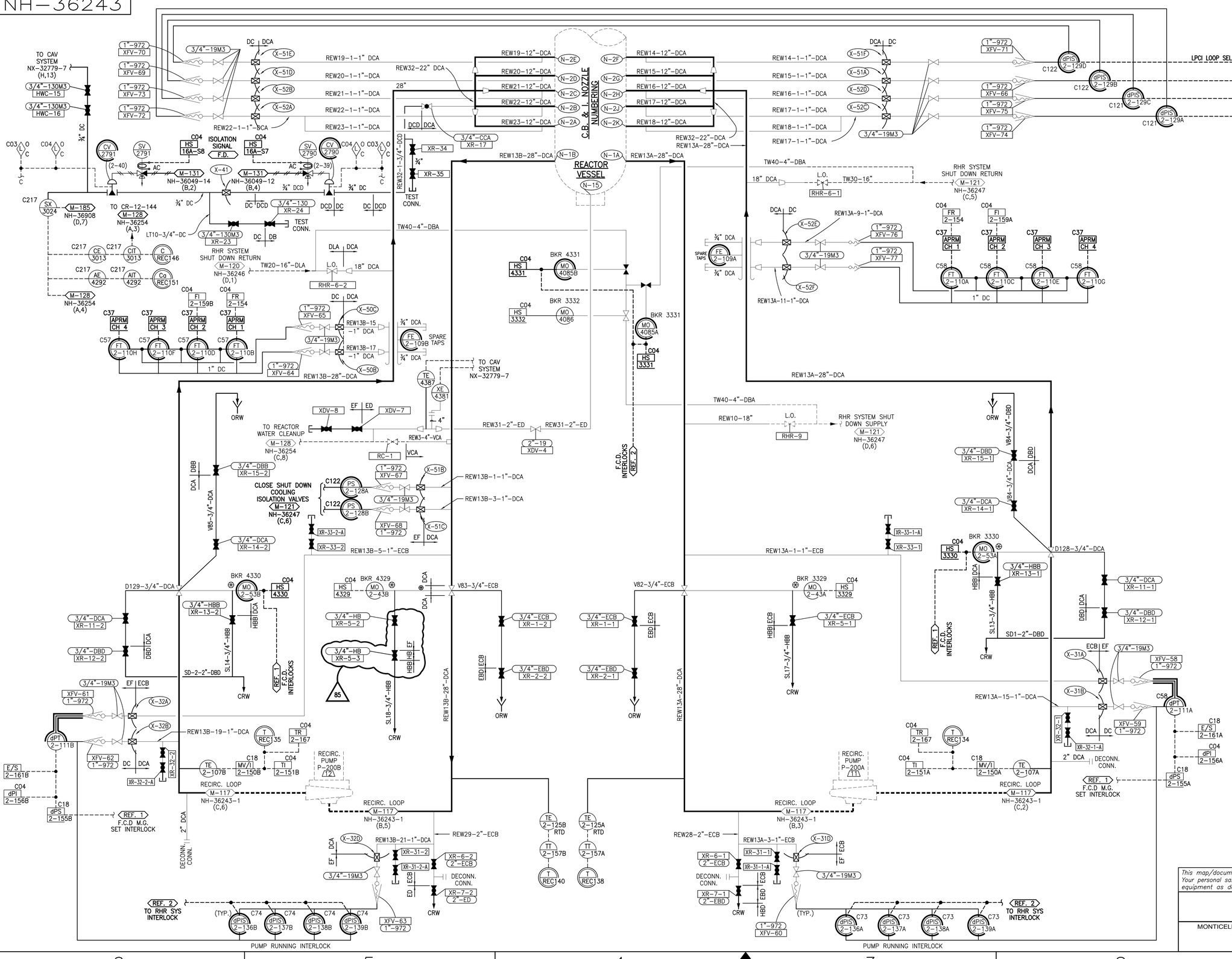
MONTICELLO NUCLEAR GENERATING PLANT P & ID REFERENCE LEG BACKFILL SYSTEM NUCLEAR BOILER SYSTEM

NORTHERN STATES POWER COMPANY
MINNEAPOLIS

SCALE: NONE | REV 76

NH-36242-2

NH-36243



REVISIONS
76 EC11951 A/R 01121715 DWN: JJP 3-5-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
77 EC13693 DWN: JJP 2-25-09 CHK: BAL 2-26-09 APPR: AVW 2-27-09
78 EC10856 DWN: DN 5-1-09 CHK: RKJ 5-1-09 APPR: MAC 5-1-09
79 EC14391 DWN: JJP 6-11-09 CHK: BAL 6-15-09 APPR: AVW 7-13-09
80 EC17902 DWN: JJP 5-23-11 CHK: BAL 5-23-11 APPR: DZ 5-23-11
81 EC18123 DWN: JJP 3-11-14 CHK: BAL 3-20-14 APPR: MLW 3-20-14
82 EC25011 PAGE 3 ADDED TO .PDF DOC. DWN: JJP 1-28-15 CHK: BAL 1-28-15 APPR: RAD 1-28-15
83 EC23857 DWN: JJP 4-13-15 CHK: ESS 5-2-15 APPR: MJW 5-2-15
84 EC25784 DWN: JJP 6-3-15 CHK: BAL 6-8-15 APPR: FM 6-18-15
85 601000001534 DWN: NJM 5-5-19 CHK: 600000538411 APPR: 600000538403

NOTES:

1. THIS WAS REDRAWN FROM P & ID M-117 (NH-36243) REV. M4 AND INCORPORATES CHANGES AND AS BUILT INFORMATION BASED ON THE RECIRCULATION PIPING REPLACEMENT PROGRAM. DRR #MO-84-369.
2. FOR SAMPLE SYSTEM DETAILS SEE M-185 (NH-36908).

REFERENCE DRAWINGS:

1. RECIRCULATION FLOW CONTROL F.C.D. (GE 729E203) 5828-APED-2A-7 & 8 NX-7831-22-1 & 2, NX-7831-21-1 & 2
2. RESIDUAL HEAT REMOVAL SYS. F.C.D. (GE 729E587) 5828-APED-10-5, 6 & 7 NX-7905-6-1, 2 & 3
3. NEUTRON MONITORING SYSTEM IED (GE 728E993) 5828-APED-7-2 & 3 NX-7830-2-1 & 2, NX-7830-4-1 THRU 4
4. VARIABLE SPEED RECIRC. PUMPS & M/G SET ELEMENTARY DIAGRAM (GE 730E166) 5828-APED-2E THRU 12 NX-7831-80-1 THRU 10
5. POWER RANGE NEUTRON MONITORING SYSTEM ELEM DIAGRAM (GE 105E1503NF) SHT 10-13 NX-236544-1-10 THRU 13

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-117
MONTI CAD DWG "AH"

P&ID RECIRCULATION LOOPS NUCLEAR BOILER SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy™ NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 85

NH-36243

NH-36243-1

THERMOCOUPLES RECORDED PER PUMP-MOTOR UNIT

TE/A1 TE/B1 TE/C1 TE/D1 TE/E1 TE/F1 TE/G1 TE/H1 TE/J1 TE/K1 TE/22 *NOTE 2

F.C.D. INTERLOCKS REF. 1

VIBRATION SWITCH RESET HS

TR 2-2-31

C04 MG CONTROL 01103

JCT. BOX

REC130-D1 REC131-D2 REC116-B1 REC117-B2 (SEE BELOW)

#2 MOTOR LOWER BEARING OIL ADDITION RESERVOIR T-208B (5 GAL) OIL

#1 MOTOR LOWER BEARING OIL ADDITION RESERVOIR T-208A (5 GAL) OIL

LIST OF PUMP & MOTOR THERMOCOUPLES
(TYPICAL FOR EACH PUMP)

TE/A1,A2 THRUST BRG. UPPER FACE (M-146 & M-147)
TE/B1,B2 THRUST BRG. LOWER FACE
TE/C1,C2 UPPER GUIDE BEARING
TE/D1,D2 MOTOR WINDING 'A' (R-244 & R-245)
TE/E1,E2 MOTOR WINDING 'B'
TE/F1,F2 MOTOR WINDING 'C'
TE/G1,G2 LOWER GUIDE BEARING
TE/H1,H2 UPPER SEAL CAVITY
TE/J1,J2 LOWER SEAL CAVITY
TE/K1,K2 BEARING OIL COOLING WATER
TE/22 SEAL CAVITY COOLING WATER

FROM TE (B,6) FROM TE (B,2)

#2 MOTOR BKR.152-203 #1 MOTOR BKR.152-103

CONTROL ROD DRIVE M-118 NH-36244 (A,2) X-38B

CONTROL ROD DRIVE M-118 NH-36244 (A,3) X-37B

V89-¾"-DCA V89-1"-DCA V88-¾"-DCA V88-1"-DC

XR-27-2 *SEE NOTE 3 XR-27-1 *SEE NOTE 3

XR-10-4 1"-CCA XR-10-2 1"-CCA XR-10-2B 1"-CCA XR-9-2 1"-CCA

XR-9-1 1"-CCA XR-10-3 1"-CCA XR-10-1 1"-CCA XR-10-2A 1"-CCA

ORW

SV 4935B SV 4936B L38-12 SV 4936A SV 4935A L38-10

VM 5603 VE 5603A VE 5603B V REC127

VE 5602A VM 5602 VE 5602B V REC126

XR-53 XR-52 XR-50 XR-51

C18 E/S 2-2-29

C57 PIT 2-2-24B C04 PI 2-2-32B C04 PI 2-2-32A C58 PIT 2-2-24A

X-32E XFV-80 3/4"-19M3 1"-972 X-32F XFV-81

X-31E XFV-78 3/4"-19M3 1"-972 X-31F XFV-79

C57 PIT 2-2-25B C04 PI 2-2-33B C04 PI 2-2-33A C58 PIT 2-2-25A

D133-1½"-HB D135-¾"-HB LT12-¾"-DCA SC4-1"-DCA

D134-¾"-HB LT11-¾"-DCA SC1-1"-DCA

D132-1½"-HBB

LOWER PUMP SEAL HX. UPPER PUMP SEAL CHAMBER LOWER PUMP SEAL CHAMBER UPPER PUMP SEAL HX.

RECIRC. PUMP P-200B 12 (2-2-1B) RECIRC. PUMP P-200A 11 (2-2-1A)

RECIRC. LOOP M-117 NH-36243 (A,6) REW13B-28"-DCA REW13B-23-1"-DCA REW13B-14-1"-DCA RECIRC. LOOP M-117 NH-36243 (A,5)

RECIRC. LOOP M-117 NH-36243 (A,3) REW13A-28"-DCA REW13A-7-1"-DCA REW13A-5-1"-DCA RECIRC. LOOP M-117 NH-36243 (A,2)

PRESSURE REDUCING COIL UPPER PUMP SEAL HX. RETIRED IN PLACE

V1B-¾"-DCA XR-29-2 3/4"-CCA XR-30-2 3/4"-CCA

V1A-¾"-DCA XR-30-1 3/4"-CCA XR-29-1 3/4"-CCA

TE 2-2B-J1J2 TO JCT. BOX TE 2-2A-J1J2 TO JCT. BOX

A/S M-131 NH-36049-12 (D,5) A/S M-131 NH-36049-12 (A,3)

AO 2-2-11B SV 2-2-11B AO 2-2-11A SV 2-2-11A

ENERGIZED WHEN B DRIVE MOTOR BREAKER OPEN ENERGIZED WHEN A DRIVE MOTOR BREAKER OPEN

FSL 2-2-23B FSH 2-2-21B FSL 2-2-23A

REACTOR BUILDING CLOSED COOLING WATER M-111-1 NH-36042-2 (B,5) REACTOR BUILDING CLOSED COOLING WATER M-111-1 NH-36042-2 (A,5)

CW3-2"-HF CW4-2"-HF CRW

NOTES:

1. THIS WAS REDRAWN FROM P&ID M-117 (NH-36243) REV. M2 AND INCORPORATES CHANGES AND AS BUILT INFORMATION BASED ON THE RECIRCULATION PIPING REPLACEMENT PROGRAM.
2. THE PRIMARY THERMOCOUPLE FOR THE B RECIRC #1 SEAL CAVITY FAILED A NEW WIRE WAS INSTALLED IN J10 SUCH THAT THE B RECIRC IS NOW FED FROM THE SPARE THERMOCOUPLE J2.
3. XR-27-1 AND XR-27-2 ARE PISTON STYLE CHECK VALVES PER ECR601000001449. 85

REFERENCE DRAWINGS:

1. RECIRCULATION FLOW CONTROL F.C.D. (GE 729E203) 5828-APED-2A-7 8C8 (DRAWING IS IN TECH. MANUAL NX-7831-411)

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

REVISIONS

76 EC806
DWN: JJP 4-2-07
CHK: RLJ 4-12-07
APPR: DZ 4-12-07

77 EC9741 A/R 01059540
DWN: JJP 6-18-07
CHK: BAL 6-18-07
APPR: EAN 6-20-07

78 EC11951 A/R 01121715
DWN: JJP 3-5-08
CHK: BJR 3-11-08
APPR: RMG 3-12-08

79 EC10856
DWN: JJP 4-28-09
CHK: DDW 4-30-09
APPR: MAC 5-1-09

80 EC23704
DWN: JJP 3-11-14
CHK: BAL 3-11-14
APPR: BJR 3-13-14

81 EC25011
PAGE 3 ADDED TO .PDF DOC.
DWN: JJP 1-28-15
CHK: BAL 1-28-15
APPR: RAD 1-28-15

82 EC23857
DWN: JJP 4-13-15
CHK: ESS 5-4-15
APPR: MJW 5-4-15

83 EC26787
DWN: JJP 4-7-17
CHK: BAL 4-14-17
APPR: SJH 4-14-17

84 EC26888
DWN: JJP 5-1-17
CHK: BAL 5-1-17
APPR: TKN 5-10-17

85 601000001449
DWN: JJP 5-3-19
CHK: 600000537659
APPR: 600000537608

M-117
MONTI CAD DWG "D"

P&ID RECIRC LOOPS, PUMPS & MOTORS
NUCLEAR BOILER SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy
NORTHERN STATES POWER COMPANY

SCALE: NONE REV 85

NH-36243-1

NH-36244

REVISIONS	
84	EC 26902 DWN: JJP 9-15-16 CHK: BAL 9-16-16 APPR: SHU 9-16-16
85	EC 26787 DWN: JJP 4-7-17 CHK: BAL 4-14-17 APPR: SJH 4-14-17
86	EC 26888 DWN: JJP 5-1-17 CHK: BAL 5-1-17 APPR: TKN 5-10-17
87	EC 601000000215 DWN: NJM 10-10-17 CHK: BAL 10-10-17 APPR: AJR 10-10-17
88	601000000410 DWN: JJP 1-24-18 CHK: BAL 1-24-18 APPR: DAM 1-24-18
89	601000001449 DWN: JJP 5-3-19 CHK: 600000537659 APPR: 600000537608

TO INDIVIDUAL HYDRAULIC CONTROL UNIT (TYP FOR 121 UNITS) M-119 NH-36245 (A,6)

HYDRAULIC CONTROL UNITS SCRAM VALVE PILOT AIR HEADER

TO SCRAM DISCHARGE VOLUME VENT AND DRAIN SOLENOID VALVES M-119 NH-36245 (B,3)

ATWS ARI

REACTOR PROTECTION SYSTEM

70-100 PSIG INSTRUMENT AIR SUPPLY M-131 NH-36049-14 (D,8)

HYDRAULIC CONTROL UNITS EXHAUST WATER HEADER

HYDRAULIC CONTROL UNITS COOLING WATER HEADER

HYDRAULIC CONTROL UNITS DRIVE WATER HEADER

HYDRAULIC CONTROL UNITS ACCUMULATORS CHARGING WATER HEADER

PUMP TEST BYPASS

TO RWCU M-128 NH-36254 (D,6)

TO BACKFILL SYSTEM M-116-2 NH-36242-2 (D,5)

FROM CONDENSATE SERVICE SYSTEM M-108 NH-36039 (D,6)

12 CRD PUMP P-201B

11 CRD PUMP P-201A

STANDBY CUNO FILTER

#11 FILTER

#12 FILTER

RECIRC TO COND STORAGE TANKS M-108 NH-36039 (B,2)

M-108 NH-36039 (C,6)

TURBINE BUILDING

REACTOR BUILDING

TO MVP ROOM (ORW)

FROM COND LINE M-105 NH-36036 (A,5)

FROM CST'S M-108 NH-36039 (A,4)

TO AI-162 (B-1)

ALT BORON INJ

FLUSH CONNECTION

STABILIZING VALVE ASSEMBLY 3-25A (NOT IN SERVICE)

STABILIZING VALVE ASSEMBLY 3-25B (NOT IN SERVICE)

FILTER 3-27

REACTOR MANUAL CONTROL

SYSTEM FLUSH CONNECTION

REACTOR PRESSURE M-116-1 NH-36242-1 (C,6)

TO SV-3-20 (B-6)

SPARE

CONTROL ROD DRIVE WATER PUMPS

SEE REF DWG #3 AND #4

POST FILTERS

* SUPPLIED WITH EQUIPMENT

FLOW CONTROL STATION

(SHOWN WITH AUTO AIR LOADING)

TO #11 RECIRC PUMP M-117 NH-36243-1 (D,4)

TO #12 RECIRC PUMP M-117 NH-36243-1 (D,4)

*SEE NOTE 3

DETAIL A

DPI-2-1A

DPI-2-1B

NOTES:

1. ALL SCREWED CAPS MARKED S.W. MUST BE SEAL WELDED FOLLOWING FLUSH AND CHECKOUT TESTS.
2. FOR TYPICAL INDIVIDUAL HYDRAULIC CONTROL UNIT SEE DRAWING No. M-119, NH-36245
3. XR-25-1 AND XR-25-2 ARE PISTON STYLE CHECK VALVES PER ECR601000001449. 89

REFERENCE DRAWINGS

1. CRD HYDRAULIC SYSTEM F.C.D. (GE 729E449) 5828-APED-3-28
2. CRD HYDRAULIC SYSTEM PROCESS FLOW DIAG. (GE 729E259) 5828-APED-3-21-2
3. NX-7866-32 FOR ADDITIONAL PIPING

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-118

MONTI CAD DWG 'AL'

CONTROL ROD HYDRAULIC SYSTEM P&ID

MONTICELLO NUCLEAR GENERATING PLANT

Xcel Energy® NORTHERN STATES POWER COMPANY

SCALE: NONE

REV 89

NH-36244

NH-36245

REVISIONS
76 EC 11951 A/R 01121715 DWN: JJP 3-5-08 CHK: BJR 3-11-08 APPR: RMG 3-12-08
77 EC 12044 DWN: JJP 3-25-09 CHK: KEC 3-25-09 APPR: JSO 3-25-09
78 EC 20150 DWN: JJP 8-8-12 CHK: PEB 8-9-12 APPR: DAM 8-12-12
79 EC 25011 PAGE 3 ADDED TO .PDF DOC. DWN: JJP 1-28-15 CHK: BAL 1-28-15 APPR: RAD 1-28-15

NH-36244 1"-DE EXHAUST WATER M-118 (E,6)

NH-36244 1"-DC COOLING WATER M-118 (D,6)

NH-36244 M-118 (D,6) 1"-DC DRIVE WATER

CONTROL UNIT TO HERE

½"-DC

B.

G.E.

CRD-105

CRD-103

CRD-104

CRD-137

CRD-138

FILTER ELEMENT 134

FILTER ELEMENT 136

FILTER ELEMENT 135

SV 121

SV 120

SV 122

SV 123

TEST CONNECTION P2

TEST CONNECTION P1

WITHDRAW
SETTLE
INSERT
INSERT
WITHDRAW

FROM MANUAL CONTROL ELEMENTARY DIAGRAM

POS

TO POSITION INFORMATION SYSTEM

TE

FROM OTHER DRIVES

TSC 3-243

TR 3-244

CRD005

C59

C05 A H

HIGH POINT VENT

3/4"-460M3
CRD-140

A THRU D
X-38

3/4"-DC

SLOPE ⅛"/FT

INSTALL FOLLOWING FLUSH

TEST CONNECTION P4

CRD-102

CONTROL UNIT TO HERE

BALL CHECK VALVE

CONTROL ROD DRIVE

FROM REACTOR VESSEL

HIGH POINT VENT

1"-460M3
CRD-139

1"-DC

CRD-101

TEST CONNECTION P3

X-37
A THRU D

CONTROL UNIT TO HERE

¾"

1"

½"

¾"

FROM HYDRAULIC CONTROL UNITS TYP 15 UNITS CRD13A-4"-DB

FROM HCU TYP 31 UNITS CRD14A-6"-DB

FROM HCU TYP 15 UNITS CRD15A-4"-DB

¾" DC (A,6)

SCRAM DISCHARGE HEADERS

CV 3-32C

CV 3-32A

CRD-75

C05 L O C

PI

ORW

CRD-84

CRD-86

CRD17A-1" CCD

CRD16A-12" CCD

SLOPE=⅛"/FT (TYP)

ROD WITHDRAWAL BLOCK

NO. B-1 SCRAM

NO. A-1 SCRAM

NO. A-2 SCRAM

NO. B-2 SCRAM

¾"-CCD (TYP)

1"-CCD (TYP)

LS 7430A

LS 7429A

LS 7428G

LS 7428H

LS 7428A

LS 7428B

CRD16A-24"-CCD

LS 7428F

LS 7428E

LS 7428C

LS 7428D

LS 7430B

LS 7429B

CRD16B-24"-CCD

CV 3-33A

CV 3-33B

CV 3-33C

CV 3-33D

CRD-88

CRD-89

CRD-90

CRD-91

CRD16A-2"-CCD

CRD16B-2"-CCD

CCD

NH-36043 M-137 (E,4) ORW

NH-36044 M-138 (E,4) CRW

FROM HYDRAULIC CONTROL UNITS TYP 13 UNITS CRD13B-4"-DB

FROM HCU TYP 31 UNITS CRD14B-6"-DB

FROM HCU TYP 16 UNITS CRD15B-4"-DB

CV 3-32B

CV 3-32D

CRD17B-1" CCD

CRD-85

CRD-87

CRD-74

SCRAM DISCHARGE PIPING

70 – 75 PSIG CRD AIR HEADER SUPPLY

M-118 (E,4) NH-36244

CRD-76 ¾"-73

AI-216-6

¾"-JD

C05 HS 5A-S11

SV 3-29 ND

CRD-78

CRD-77

SV 3-31C NE

SV 3-31D NE

SV 3-31A NE

SV 3-31B NE

REACTOR PROTECTION SYSTEM

CHANNEL A

CHANNEL B

SV 127 N.E.

SV 118 N.E.

SV 117 N.E.

CV 127

CV 126

POS 127

POS 126

CHANNEL B

CHANNEL A

FROM REACTOR PROTECTION ELEMENTARY DIAGRAM

NOTE: VALVE IS A DUAL SOLENOID THREE WAY POPPET VALVE CONTAINED IN ONE VALVE BODY AND SCHEMATICALLY FUNCTIONS AS DEPICTED.

EXHAUST

CRD-116

CONTROL UNIT TO HERE

½"-JD

3/4"-JD SCRAM VALVE PILOT AIR

M-118 NH-36244 (E,6)

(E,3) (E,2) 4" OR 6"-DB SCRAM DISCHARGE HEADER

CRD-114

CRD-112

¾"

3/4"-DC

TEST CONNECTION P5

G.E. B.

CONTROL UNIT TO HERE

HYDRAULIC CONTROL UNIT

(TYPICAL FOR 121 UNITS)
(CONTROL UNIT SUPPLIED BY G.E.)

NOTE: ALL EQUIPMENT NUMBERS WITHIN CONTROL UNIT ARE PREFIXED BY 3-13.

WEST C72 L H L

EAST C54 L H L

PAL LAH C05

PS 130

PI 131

LD 129

PSD 132

N_2 CHARGING SYSTEM

TUBE FITTING WITH CAP P6

CRD-111

NH-36244 M-118 (D,6) 1"-DC ACCUMULATOR CHARGING WATER

1/2"-DC

CRD-113

CRD-115

CRD-107

CRW

CONTROL UNIT TO HERE

ACCUMULATOR 125

PCV 2445

PCV 2444

RV 2443 "B" BANK

RV 2442 "A" BANK

CRD-201-2

CRD-201-1

1/4"-

VENT

CRD-202-2

CRD-202-1

CRD-203-2

CRD-203-1

TO INDIVIDUAL HOOK-UP AS REQUIRED TO HCU'S AT CAP P6

PI 3-232A

PI 3-232B

TYPE "G" NITROGEN BOTTLE SIZE 3-127 A & B

ACCUMULATOR N_2 CHARGING SYSTEM

A & B BANKS (TYP)

COLOR LEGEND
- ASME CLASS 1/QUALITY GROUP A
- ASME CLASS 2/QUALITY GROUP B
- ASME CLASS 3/QUALITY GROUP C
- QUALITY GROUP D
- SAFETY RELATED MECHANICAL
- SAFETY RELATED ELECTRICAL
- SPECIAL CONCERNS ITEM

M-119
MONTI CAD DWG 'M'

P&ID
CONTROL ROD HYDRAULIC SYSTEM

MONTICELLO NUCLEAR GENERATING PLANT
Xcel Energy®
NORTHERN STATES POWER COMPANY

SCALE: NONE | REV 79

NH-36245