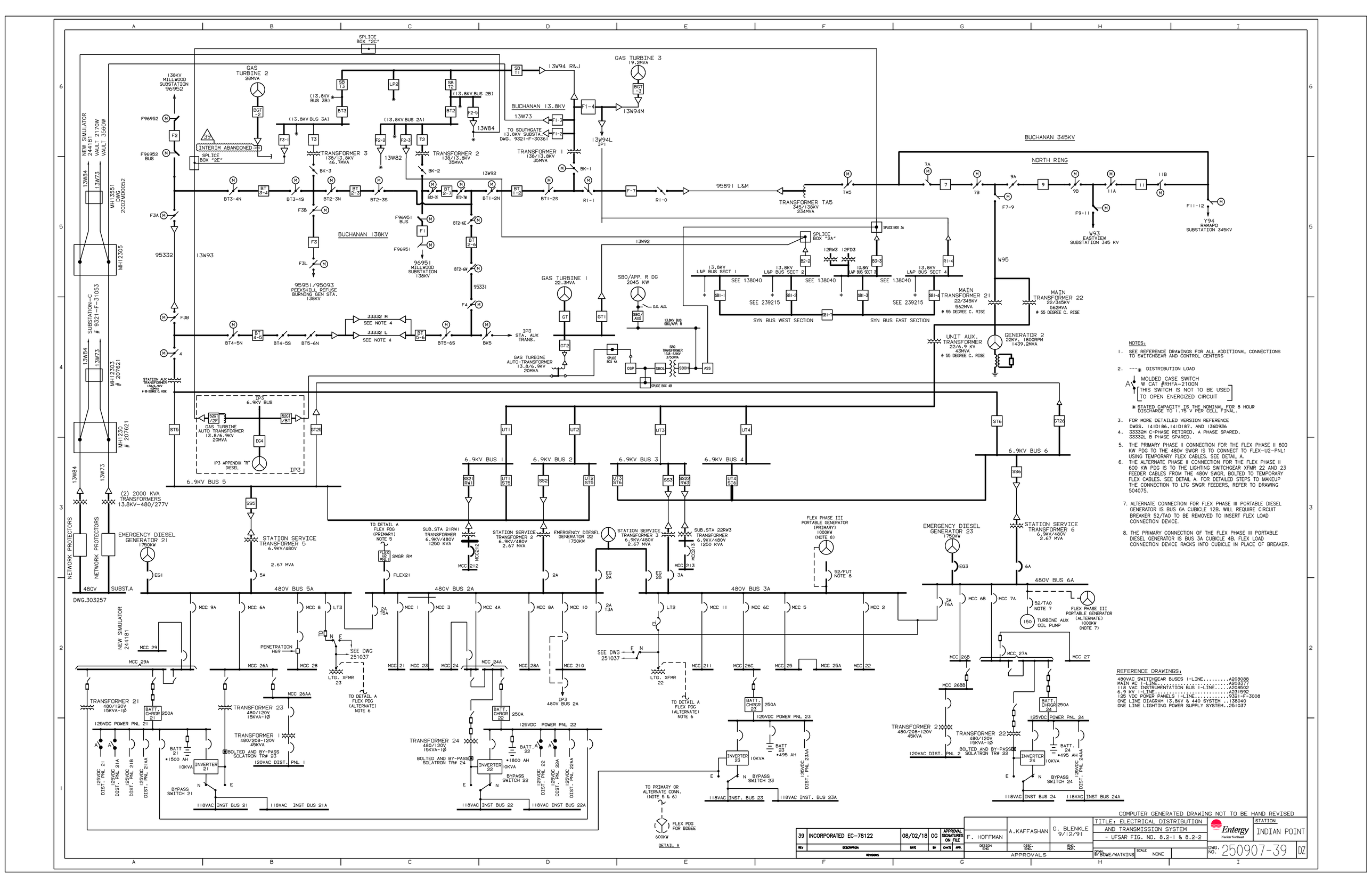

138KV MILLWOOD SUBSTATION 96952
GAS TURBINE 2 28MVA
BGT -2
GAS TURBINE 3 19.2MVA
BGT -3
13W94M
13W94L
IP1
13W94 R&J
SB T1
SB T2
SB T3
LP2
(13.8KV BUS 3B)
(13.8KV BUS 2B)
(13.8KV BUS 3A)
(13.8KV BUS 2A)
BUCHANAN 13.8KV
13W73
13W84
TO SOUTHGATE 13.8KV SUBSTA. DWG. 9321-F-30361
INTERIM ABANDONED
SPLICE BOX "2E"
TRANSFORMER 3 138/13.8KV 46.7MVA
TRANSFORMER 2 138/13.8KV 35MVA
TRANSFORMER 1 138/13.8KV 35MVA
BUCHANAN 138KV
95891 L&M
TRANSFORMER TA5 345/138KV 234MVA
BUCHANAN 345KV
NORTH RING
W93 EASTVIEW SUBSTATION 345 KV
Y94 RAMAPO SUBSTATION 345KV
SPLICE BOX "2A"
SPLICE BOX 3A
12RW3
12FD3
13.8KV L&P BUS SECT 1
13.8KV L&P BUS SECT 2
13.8KV L&P BUS SECT 3
13.8KV L&P BUS SECT 4
SEE 138040
SEE 239215
SYN BUS WEST SECTION
SYN BUS EAST SECTION
MAIN TRANSFORMER 21 22/345KV 562MVA @ 55 DEGREE C. RISE
MAIN TRANSFORMER 22 22/345KV 562MVA @ 55 DEGREE C. RISE
UNIT AUX. TRANSFORMER 22/6.9 KV 43MVA @ 55 DEGREE C. RISE
GENERATOR 2 22KV, 1800RPM 1439.2MVA
W95
95332
95951/95093 PEEKSKILL REFUSE BURNING GEN STA. 138KV
F96951 BUS
96951 MILLWOOD SUBSTATION 138KV
95331
33332 M SEE NOTE 4
33332 L SEE NOTE 4
IP3 STA. AUX TRANS.
GAS TURBINE 1 22.3MVA
SBO/APP. R DG 2045 KW
D.G. AUX.
13.8KV BUS SBO/APP. R
SBO TRANSFORMER 13.8-6.9KV 3750KVA
SPLICE BOX 4A
SPLICE BOX 4B
GAS TURBINE AUTO-TRANSFORMER 13.8/6.9KV 20MVA
STATION AUX TRANSFORMER 138/6.9KV 43MVA @ 55 DEGREE C. RISE
IP3 6.9KV BUS
GAS TURBINE AUTO TRANSFORMER 13.8/6.9KV 20MVA
IP3 APPENDIX "R" DIESEL
6.9KV BUS 5
6.9KV BUS 1
6.9KV BUS 2
6.9KV BUS 3
6.9KV BUS 4
6.9KV BUS 6
(2) 2000 KVA TRANSFORMERS 13.8KV-480/277V
NETWORK PROTECTORS
EMERGENCY DIESEL GENERATOR 21 1750KW
STATION SERVICE TRANSFORMER 5 6.9KV/480V 2.67 MVA
STATION SERVICE TRANSFORMER 6 6.9KV/480V 2.67 MVA
TO DETAIL A FLEX PDG (PRIMARY) NOTE 5
SUB.STA 21RW1 TRANSFORMER 6.9KV/480V 1250 KVA
STATION SERVICE TRANSFORMER 2 6.9KV/480V 2.67 MVA
EMERGENCY DIESEL GENERATOR 22 1750KW
STATION SERVICE TRANSFORMER 3 6.9KV/480V 2.67 MVA
SUB.STA 22RW3 TRANSFORMER 6.9KV/480V 1250 KVA
FLEX PHASE III PORTABLE GENERATOR (PRIMARY) 1000KW (NOTE 8)
EMERGENCY DIESEL GENERATOR 23 1750KW
480V SUBST.A
480V BUS 5A
480V BUS 2A
480V BUS 3A
480V BUS 6A
DWG.303257
NEW SIMULATOR 244181
MCC 9A
MCC 6A
MCC 8
LT3
MCC 1
MCC 3
MCC 4A
MCC 8A
MCC 10
LT2
MCC 11
MCC 6C
MCC 5
MCC 2
MCC 6B
MCC 7A
MCC 29
MCC 29A
MCC 26A
MCC 28
MCC 26AA
MCC 21
MCC 23
MCC 24
MCC 24A
MCC 28A
MCC 210
MCC 211
MCC 26C
MCC 25
MCC 25A
MCC 22
MCC 26B
MCC 26BB
MCC 27A
MCC 27
PENETRATION H69
SEE DWG 251037
LTG. XFMR 23
LTG. XFMR 22
TO DETAIL A FLEX PDG (ALTERNATE) NOTE 6
IP3 480V BUS 2A
TRANSFORMER 21 480/120V 15KVA-1Ø
TRANSFORMER 23 480/120V 15KVA-1Ø
TRANSFORMER 1 480/208-120V 45KVA
TRANSFORMER 24 480/120V 15KVA-1Ø
TRANSFORMER 2 480/208-120V 45KVA
TRANSFORMER 22 480/120V 15KVA-1Ø
BATT. CHRGR 250A
125VDC POWER PNL 21
125VDC POWER PNL 22
125VDC POWER PNL 23
125VDC POWER PNL 24
BATT 21 *1500 AH
BATT 22 *1800 AH
BATT 23 *495 AH
BATT 24 *495 AH
INVERTER 21 10KVA
INVERTER 22 10KVA
INVERTER 23 10KVA
INVERTER 24 10KVA
BYPASS SWITCH 21
BYPASS SWITCH 22
BYPASS SWITCH 23
BYPASS SWITCH 24
BOLTED AND BY-PASS SOLATRON TR# 23
BOLTED AND BY-PASS SOLATRON TR# 24
BOLTED AND BY-PASS SOLATRON TR# 22
120VAC DIST. PNL 1
120VAC DIST. PNL 2
118VAC INST BUS 21
118VAC INST BUS 21A
118VAC INST BUS 22
118VAC INST BUS 22A
118VAC INST. BUS 23
118VAC INST. BUS 23A
118VAC INST BUS 24
118VAC INST BUS 24A
TO PRIMARY OR ALTERNATE CONN. (NOTE 5 & 6)
FLEX PDG FOR BDBEE 600KW
DETAIL A
TURBINE AUX OIL PUMP
FLEX PHASE III PORTABLE GENERATOR (ALTERNATE) 1000KW (NOTE 7)
NOTES:
1. SEE REFERENCE DRAWINGS FOR ALL ADDITIONAL CONNECTIONS TO SWITCHGEAR AND CONTROL CENTERS
2. ---* DISTRIBUTION LOAD
A MOLDED CASE SWITCH W CAT #RHFA-2100N [THIS SWITCH IS NOT TO BE USED TO OPEN ENERGIZED CIRCUIT]
* STATED CAPACITY IS THE NOMINAL FOR 8 HOUR DISCHARGE TO 1.75 V PER CELL FINAL.
3. FOR MORE DETAILED VERSION REFERENCE DWGS. 141D186,141D187, AND 136D936
4. 33332M C-PHASE RETIRED, A PHASE SPARED. 33332L B PHASE SPARED.
5. THE PRIMARY PHASE II CONNECTION FOR THE FLEX PHASE II 600 KW PDG TO THE 480V SWGR IS TO CONNECT TO FLEX-U2-PNL1 USING TEMPORARY FLEX CABLES. SEE DETAIL A.
6. THE ALTERNATE PHASE II CONNECTION FOR THE FLEX PHASE II 600 KW PDG IS TO THE LIGHTING SWITCHGEAR XFMR 22 AND 23 FEEDER CABLES FROM THE 480V SWGR, BOLTED TO TEMPORARY FLEX CABLES. SEE DETAIL A. FOR DETAILED STEPS TO MAKEUP THE CONNECTION TO LTG SWGR FEEDERS, REFER TO DRAWING 504075.
7. ALTERNATE CONNECTION FOR FLEX PHASE III PORTABLE DIESEL GENERATOR IS BUS 6A CUBICLE 12B. WILL REQUIRE CIRCUIT BREAKER 52/TAO TO BE REMOVED TO INSERT FLEX LOAD CONNECTION DEVICE.
8. THE PRIMARY CONNECTION OF THE FLEX PHASE III PORTABLE DIESEL GENERATOR IS BUS 3A CUBICLE 4B. FLEX LOAD CONNECTION DEVICE RACKS INTO CUBICLE IN PLACE OF BREAKER.
REFERENCE DRAWINGS:
480VAC SWITCHGEAR BUSES 1-LINE.....A208088
MAIN AC 1-LINE.....A208377
118 VAC INSTRUMENTATION BUS 1-LINE....A208502
6.9 KV 1-LINE.....A231592
125 VDC POWER PANELS 1-LINE.....9321-F-3008
ONE LINE DIAGRAM 13.8KV & 440 SYSTEM ..138040
ONE LINE LIGHTING POWER SUPPLY SYSTEM..251037
COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED
39 INCORPORATED EC-78122 08/02/18 OG
REV DESCRIPTION DATE BY CHK'D APP.
REVISIONS
APPROVAL SIGNATURES ON FILE
F. HOFFMAN DESIGN ENG
A.KAFFASHAN DISC. ENG.
G. BLENKLE 9/12/91 ENG. MGR.
APPROVALS
TITLE: ELECTRICAL DISTRIBUTION AND TRANSMISSION SYSTEM - UFSAR FIG. NO. 8.2-1 & 8.2-2
Entergy Nuclear Northeast
STATION INDIAN POINT
DRAWN BY BOWE/WATKINS
SCALE NONE
DWG. NO. 250907-39 DZ

NOTES:

1. * = 2-PT'S 7200-120 LINE TO LINE . SEE DWG. 540F922 FOR CONN.
2. 60 = BLOCKS VOLTAGE REGULATOR OPERATION AND TRIPPING BY RELAY 40
3. 86P & 86BU= TRIPS REACTOR, TURBINE, DEV. 41,52/HDP2! & 52/HDP22
   TRIPS & LOCKOUT 345 KV BKR. &
   UNIT AUX. TRANS. BKR'S (52/UT!-52/UT2-52/UT3-52/UT4)
   CLOSES 6900V TIE BKR'S (52/UT2-ST5, 52/UT4-ST6, 52/UT!-ST5 & 52/UT3-ST6)
4. 86STP= TRIPS & LOCKOUT 138KV LINE & STA. AUX. TRANS. BKR'S (52/ST5 & 52/ST6)
5. 6900V DEV. 52 = 75DH500 ACB 1200A.EXCEPT ∘ = 2000A
6. 480V SUPPLY BREAKERS SHOWN ARE DB-75
7. 86UT= TRIPS 86P, 86BU, 85L!/FW95 & 85L2/FW95
8. ALL RELAYS, METERS & INSTRUMENTS LOCATED ON CONTROL ROOM PANEL EXCEPT DEV. 63 WHICH IS LOCATED AT TRANSFORMER
9. 86STBU = TRIPS & LOCKOUT 138KV LINE & STA. AUX. TRANS. BKR'S(52/ST5 & 5 /ST6
10. 86STP-A & 86 STBU-A INITIATE 138KV TRANSFER TRIP.
11. REF. CON. ED. DWG. A179692-A FOR 138KV SUBSTATION CONTINUATION.
12. THIS DRAWING SUPERSEDES WESTINGHOUSE DWG 540F92! REV. 6A (MICROFILM NO.188B93)
13. CURRENT SENSOR RATIO PROPRIETARY TO PCS2000.

REFERENCE DWG'S :

1. 480V. ONE LINE DIAGRAM ---------- 208088
2. GEN. NO.2 MAIN THREE LINE DIAGRAM----- 228352
3. MAIN THREE LINE DIAGRAM ---------- 9321-F-3011
4. 6.9KV. ONE LINE DIAGRAM ---------- 231592
5. DISTURBANCE MONITORING EQUIPMENT (DME) SCHEMATIC OF ANALOG POINTS ---------- 504154
6. STA. AUX TRANS. OPEN PHASE DETECTION SYSTEM ---------- 504276
7. GT AUTO TRANSF. OPEN PHASE DETECTION SYSTEM ---------- 504287

REV	DESCRIPTION	DATE	BY	CH'D	APP.
21	INCORPORATED EC-58435	4-10-18	SM	SA	SA

REVISIONS

	DATE	CKR.	SUPV.	DESIGN ENG	DISC. ENG.	ENG. MGR.
			B. SCHALL 5/15/90		W'HSE	W'HSE
REVIEW	APPROVALS					

TITLE: MAIN ONE LINE DIAGRAM

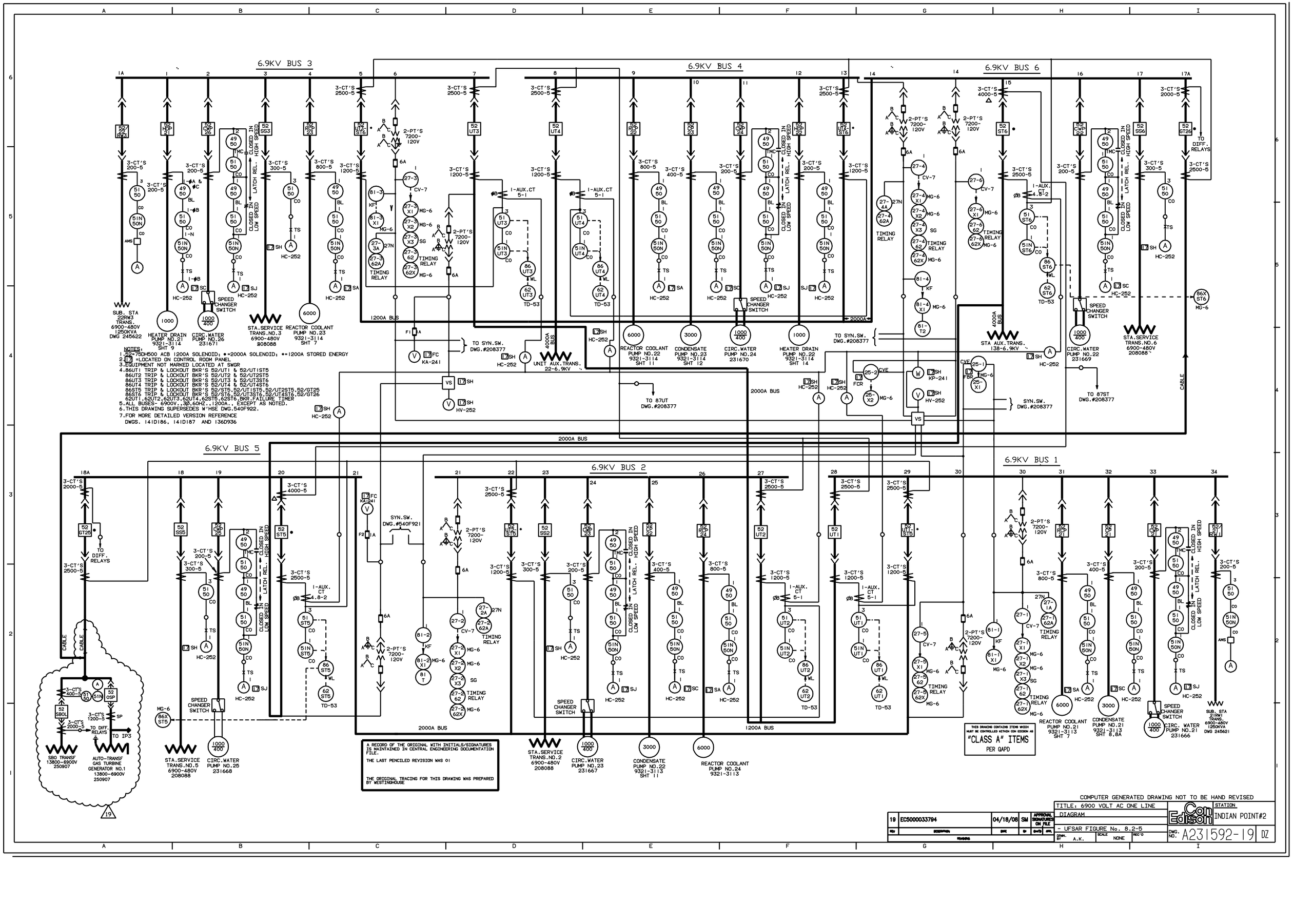
– UFSAR FIGURE No. 8.2-3

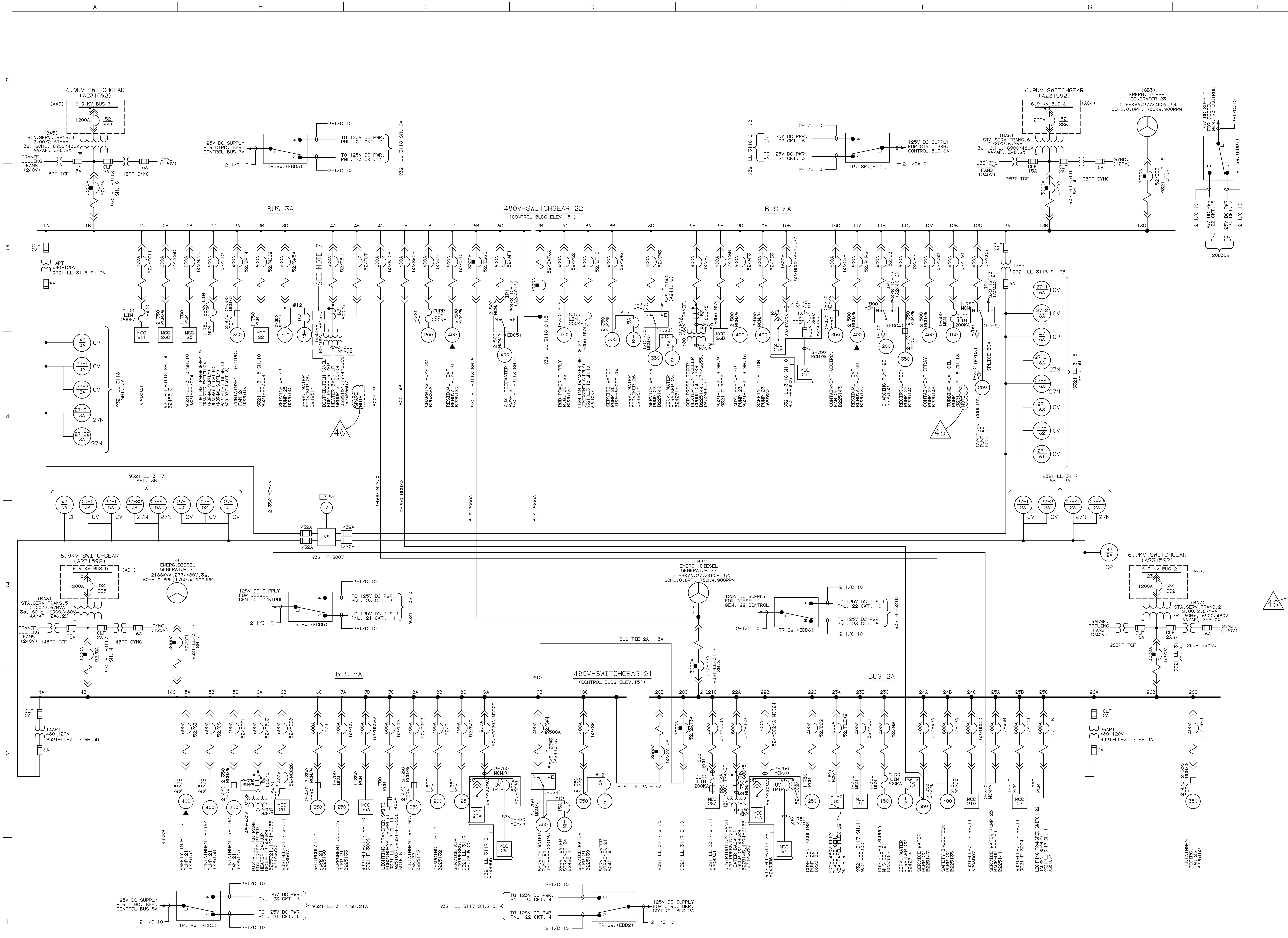
DRWN. BY T. PUGLIA | SCALE NONE | REC'D

STATION: INDIAN POINT UNIT #2

DWG. NO. A208377-21 DZ

COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED


6.9KV BUS 3
6.9KV BUS 4
6.9KV BUS 6
6.9KV BUS 5
6.9KV BUS 2
6.9KV BUS 1
2000A BUS
1200A BUS
4000A BUS
CABLE
SUB. STA 22RW3 TRANS. 6900-480V 1250KVA DWG 240622
HEATER DRAIN PUMP NO.21 9321-3114 SHT 9
CIRC.WATER PUMP NO.26 231671
STA.SERVICE TRANS.NO.3 6900-480V 208088
REACTOR COOLANT PUMP NO.23 9321-3114 SHT 7
UNIT AUX.TRANS. 22-6.9KV
REACTOR COOLANT PUMP NO.22 9321-3114 SHT 11
CONDENSATE PUMP NO.23 9321-3114 SHT 12
CIRC.WATER PUMP NO.24 231670
HEATER DRAIN PUMP NO.22 9321-3114 SHT 14
STA AUX.TRANS. 138-6.9KV
CIRC.WATER PUMP NO.22 231669
STA.SERVICE TRANS.NO.6 6900-480V 208088
TO SYN.SW. DWG.#208377
TO 87UT DWG.#208377
TO 87ST DWG.#208377
SYN.SW. DWG.#208377
SPEED CHANGER SWITCH
TIMING RELAY
TO DIFF. RELAYS
SBO TRANSF 13800-6900V 250907
AUTO-TRANSF GAS TURBINE GENERATOR NO.1 13800-6900V 250907
TO IP3
STA.SERVICE TRANS.NO.5 6900-480V 208088
CIRC.WATER PUMP NO.25 231668
STA.SERVICE TRANS.NO.2 6900-480V 208088
CIRC.WATER PUMP NO.23 231667
CONDENSATE PUMP NO.22 9321-3113 SHT 11
REACTOR COOLANT PUMP NO.24 9321-3113
REACTOR COOLANT PUMP NO.21 9321-3113 SHT 7
CONDENSATE PUMP NO.21 9321-3113 SHT 8A
CIRC. WATER PUMP NO.21 231666
SUB. STA 21RW1 TRANS. 6900-480V 1250KVA DWG 245621
SYN.SW. DWG.#540F921
NOTES:
1.52=75DH500 ACB 1200A SOLENOID; •=2000A SOLENOID; •=1200A STORED ENERGY
2.[17] =LOCATED ON CONTROL ROOM PANEL
3.EQUIPMENT NOT MARKED LOCATED AT SWGR
4.86UT1 TRIP & LOCKOUT BKR'S 52/UT1 & 52/UT1ST5
86UT2 TRIP & LOCKOUT BKR'S 52/UT2 & 52/UT2ST5
86UT3 TRIP & LOCKOUT BKR'S 52/UT3 & 52/UT3ST6
86UT4 TRIP & LOCKOUT BKR'S 52/UT4 & 52/UT4ST6
86ST5 TRIP & LOCKOUT BKR'S 52/ST5,52/UT1ST5,52/UT2ST5,52/GT25
86ST6 TRIP & LOCKOUT BKR'S 52/ST6,52/UT3ST6,52/UT4ST6,52/GT26
62UT1,62UT2,62UT3,62UT4,62ST5,62ST6,BKR.FAILURE TIMER
5.ALL BUSES- 6900V.,3Ø,60HZ.,1200A., EXCEPT AS NOTED.
6.THIS DRAWING SUPERSEDES W'HSE DWG.540F922.
7.FOR MORE DETAILED VERSION REFERENCE DWGS. 141D186, 141D187 AND 136D936
A RECORD OF THE ORIGINAL WITH INITIALS/SIGNATURES IS MAINTAINED IN CENTRAL ENGINEERING DOCUMENTATION FILE.
THE LAST PENCILED REVISION WAS 01
THE ORIGINAL TRACING FOR THIS DRAWING WAS PREPARED BY WESTINGHOUSE
THIS DRAWING CONTAINS ITEMS WHICH MUST BE CONTROLLED WITHIN CON EDISON AS "CLASS A" ITEMS PER QAPD
COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED
TITLE: 6900 VOLT AC ONE LINE DIAGRAM - UFSAR FIGURE No. 8.2-5
STATION INDIAN POINT#2
DWG. NO. A231592-19 DZ
19 EC5000033794 04/18/08 SM
APPROVAL SIGNATURES ON FILE
DRWN. BY A.K.
SCALE NONE
REC'D
Con Edison



REFERENCE DWGS:

MAIN ONE LINE DIAG. ---------- A208377
6.9KV ONE LINE ---------- A231592
MAIN THREE LINE DIAG. ---------- 9321-F-3011
DIESEL GENERATOR & 480V THREE LINE ---------- 9321-F-3007
EXTERNAL W/D 480V SWGR #22 UNIT'S 1,2,3 ----- 9321-F-3168
EXTERNAL W/D 480V SWGR #22 UNIT'S 4,5,6 ----- 9321-F-3169
EXTERNAL W/D 480V SWGR #22 UNIT'S 7,8,9 ----- 9321-F-3170
EXTERNAL W/D 480V SWGR #22 UNIT'S 10,11,12 -- 9321-F-3171
EXTERNAL W/D 480V SWGR #22 UNIT 13 ---------- 9321-F-3172
EXTERNAL W/D 480V SWGR #21 UNIT'S 14,15,16 -- 9321-F-3163
EXTERNAL W/D 480V SWGR #21 UNIT'S 17,18,19 -- 9321-F-3164
EXTERNAL W/D 480V SWGR #21 UNIT'S 20,21,22 -- 9321-F-3165
EXTERNAL W/D 480V SWGR #21 UNIT'S 23,24,25 -- 9321-F-3166
EXTERNAL W/D 480V SWGR #21 UNIT 26 ---------- 9321-F-3167
INTERNAL W/D 480V SWGR #22 UNIT'S 1 & 2 ----- 204B75
INTERNAL W/D 480V SWGR #22 UNIT'S 3 & 4 ----- 204B82
INTERNAL W/D 480V SWGR #22 UNIT'S 5 & 6 ----- 204B83
INTERNAL W/D 480V SWGR #22 UNIT'S 7 & 8 ----- 204B69
INTERNAL W/D 480V SWGR #22 UNIT'S 9 & 10 ---- 204B74
INTERNAL W/D 480V SWGR #22 UNIT'S 11 & 12 --- 204B76
INTERNAL W/D 480V SWGR #22 UNIT 13 ---------- 204B80
INTERNAL W/D 480V SWGR #21 UNIT'S 14 & 15 --- 204B72
INTERNAL W/D 480V SWGR #21 UNIT'S 16 & 17 --- 204B73
INTERNAL W/D 480V SWGR #21 UNIT'S 18 & 19 --- 204B81
INTERNAL W/D 480V SWGR #21 UNIT'S 20 & 21 --- 204B70
INTERNAL W/D 480V SWGR #21 UNIT'S 22 & 23 --- 204B79
INTERNAL W/D 480V SWGR #21 UNIT'S 24 & 25 --- 204B78
INTERNAL W/D 480V SWGR #21 UNIT 26 ---------- 204B71

NOTE:

1. THIS DRAWING REPRODUCED FROM AND SUPERSEDES WHSE. CORP. DWG.#540F923
2. ALL BREAKERS ARE DB-50 ACB, FRAME SIZE 1600A, EXCEPT MARKED ■ -DB-75 ACB, FRAME SIZE 3000A (WHSE DWG 682C556 MICROFILM NO. 204B77)
3. [17] LOCATED ON CONTROL ROOM PANEL
4. ▲ EMERGENCY CABLE CONNECTION AVAILABLE FROM IP1 SUBSTATION 12FD3 VIA TRANSFER SWITCHES EDC3 AND EDG1. SEE DRAWING B217913.
5. BREAKER RATINGS SHOWN ARE SENSOR RATINGS.
6. ⧠ INDICATES PENETRATION
7. REFERENCE CLASSIFICATION DOCUMENT CL-04-014
8. FOR USE WHEN USING PAB LIGHTING TRANSFORMER FEEDER CABLES TO SUPPLY THE 480V SWITCHGEAR FROM THE FLEX PORTABLE GENERATOR.
9. FLEX CIRCUIT BKR 52/FLEX21 IN COMPT. 23A IS NORMALLY LOCKED OPEN AND MANUALLY OPERATED.
10. ALTERNATE CONNECTION FOR FLEX PHASE III PORTABLE DIESEL GENERATOR IS BUS 6A CUBICLE 12B. WILL REQUIRE CIRCUIT BREAKER 52/TAO TO BE REMOVED TO INSERT FLEX LOAD CONNECTION DEVICE.
11. THE PRIMARY CONNECTION OF THE FLEX PHASE III PORTABLE DIESEL GENERATOR IS BUS 3A CUBICLE 4B AFTER INSERTION OF FLEX LOAD CONNECTION DEVICE.

46

COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
0	INCORPORATED EC-50150	3/23/16	SJB	APPROVAL SIGNATURES ON FILE	

REVISIONS

DATE	CKR.	SUPV.	DESIGN ENG	DISC. ENG.	ENG. MGR.
1/15/93	E.TY	MR	FRANCIS HOFFMAN	K.S. 04/20/87	A.K. FOR G.L. BLENKLE 04/20/87

REVIEW — APPROVALS

TITLE: ONE LINE DIAG. OF 480 VAC, SWGRS. 21 & 22, BUS 2A, 3A, 5A & 6A - UFSAR FIGURE No. 8.2-6

DRWN. BY I. WATKINS | SCALE NONE | REC'D

Entergy Nuclear Northeast

STATION: INDIAN POINT #2

DWG. NO. A208088-46 DZ

480V SWITCHGEAR 21 (PARTIAL)

480V SWITCHGEAR 22 (PARTIAL)

A208088

BUS 2A — 25B, 23B — 52 MCC3 600A, 52 MCC1 400A

BUS 3A — 3B, 2B — 52 MCC2 600A, 52 MCC5 600A

1-750 MCM / ø

1-350 MCM / ø

480V MOTOR CONTROL CENTER 21

(INTAKE STRUCTURE 15'-0")

9321-F-3178

1BL 20A #12 — EPB62 CONTROL PANEL HYDROCHLORITE SKID PUMP 200MB0920 (SEE NOTE 1) 9321-LL-3121 SH.8 & 200MB0920 (SEE NOTE 2) [29]

1BR 20A #12 — EPB63 & EPB75 CONT PNLS HYPOCHLORITE SKID U-2 TRANSFER PUMP SKID DWG. 9321-LL-3121 SH.8 200MB0923 & 200MB0657 (SEE NOTE 2) [29]

1DL 30A #12 — TO ZURN STRAIN-O-MATIC CAB STRIP HEATERS FOR SERVICE WATER PUMPS 21,22,23,24,25 & 26 ZURN DWG. #47969

1DR — SPARE

1F 100A — 25KVA 480V-208/120V; 25KVA 480V-208/120V; 25KVA 480V-208/120V; LIGHTING PNL #21, 34 CIRCUITS 9321-F-3178

1H — SPARE

1K — SPARE

1M — TRAVELING SCREEN 25 [26]

2F — SPARE

2HL — SCREEN 27 HEATER. 6600W [26]

2HR — TRAVELING SCREEN 24 [26]

2K 30A #10 — TRAVEL SCREEN 27 CONTROL PANEL [26]

2M 30A #10 — SERVICE WATER PIT SUMP PUMP 26 9321-LL-3121 SH.10 [26]

3BL 15A #12 — WELDING RECEPTACLE (1) & SERVICE WATER STRAINERS TEST RECEPT. [26]

3BR 100A #2 — HEAT TRACING PANEL #21 INTAKE AREA [26]

3D 40A #8 — 30 KVA

3F 30A #10 — TRAVELING SCREEN 23 [26]

3H 30A #10 — TRAVELING SCREEN 22 [26]

3K — SPARE

3M 30A #10 — TEMP. FEED WELDING [26]

4B 30A #10 — TRAVELING SCREEN 21 [26]

4D — SPARE

4F — SPARE

4HL — SPARE

4HR — SPARE

4K — SPARE

4ML — SPARE

4MR — SPARE

480V MOTOR CONTROL CENTER 23

(TURB. GEN. BLDG. 15'-0")

9321-F-3181 & 9321-F-3182

1C 100A #2 — WELDING RECEPTICLES (5) [24]

1E 50A #12 — OIL/WATER SEPARATOR (DSEP-1) 306956 [24]

1M 30A #10 — VOLTAGE REG. CUB INVERTER #2 IP2 S-000057 [24]

2C 30A #10 — OIL/WATER SEPARATOR #434 [24]

2E 200A IEC 200A TYPE AJT 4/0 — CONDENSER VACUUM PUMP #2 23903 [25]

2M 200A IEC 200A TYPE AJT 4/0 — HOIST TROLLEY 2#1/2 PMP 5/16 CHAIN HEATER BAY CRANES (2) [25]

3D 200A #2/0 — BOILER FEED PUMP LUBE OIL(SPERATOR #21 (TURB. BLDG) 59152

3F 25A #10 — CLOSED LOOP SYSTEM CUDLING PUMP #21 9321-LL-3123 SH.4 [25]

3H 50A #10 — SPARE

3K — SPARE

3M 15A #12 — TURB-GEN. BLDG. CONDENSATE PIT SUMP PUMP 21A 9321-LL-3123 SH25 [24]

4D 15A #12 — HEATER BAY MEZZ.-OPERATED MEDIA [25]

4F 30A #3 3Ø — WATER CHLORIDE ANALYZER SYSTEM A2269339 [24]

4H 20A #12 — SPARE

4M 20A #12 — SPARE

5B — SPARE

5D 100A #2 — CONTROL PANEL MAIN TURBINE SEPARATOR MTR(LOS-CPH) 501755

5F 30A #10 — SEAL OIL VACUUM PUMP 9321-LL-3123 SH3 [24]

5H — SPACE

5K 20A #12 — TEMP. CONTROL UNIT COMPRESSOR 2100MC5848 2100MC5847 [24]

5M 15A #12 — TEMP. CONTROL UNIT CONDENSER 2100MC5848 2100MC5847 [24]

6B 15A #12 — B.F.P. TURNING GEAR DRIVE 9321-LL-3123 SH17 [25]

6D 15A #12 — TURB-GEN. BLDG. CONDENSATE PIT SUMP PUMP 21 9321-LL-3123 SH18 [24]

6F 15A #12 — B.F.P. OIL CONSOLE PUMP 9321-LL-3123 SH19 [24]

6H 40A #12 — B.F.P. SEAL INJECTION BOOSTER PUMP 21 9321-LL-3122 SH21 [25]

6K 15A #12 — STEAM HEATING CONDENSATE RECEIVER PUMP 22 9321-LL-3123 SH22 [25]

6M 15A #12 — B.F.P. TURBINE DRIP TANK PUMP 22 9321-LL-3123 SH23 [25]

7D 15A #12 — SERVICE WATER VALVE PIT SUMP PUMP 27 9321-LL-3123 SH26 [25]

7H 15A #12 — MS-6-1 REHEATER STEAM SHUT-OFF VALVE 28 9321-LL-3123 SH27A [26]

7M 15A #12 — MS-6 REHEATER STEAM SHUT-OFF VALVE 24 9321-LL-3123 SH27 [26]

8E — CONTROL VALVE 14" SCAVENGING STEAM CONDENSER 9321-LL-3123 SH28 (RETIRED) [24]

8M 200A #2 — SPARE

9C 15A #12 — B.F.P. OIL CONSOLE MAIN PUMP 23 9321-LL-3123 SH12 [36]

9F 15A #12 — STEAM BUMP OUTLET VALVE #2 (SEX-76) A207326

9J 15A #12 — STEAM BUMP OUTLET VALVE #4 (SEX-74) A207326

9M — STEAM BUMP OUTLET VALVE #6 (SEX-76) A207326

480V MOTOR CONTROL CENTER 25

(TURB. GEN. BLDG. 15'-0")

1B 100A #2 — WELDING RECEPTACLES [24]

1D 40A #10 — WALL EXHAUST FAN 26 9321-LL-3125 SH10 [24]

1F 40A #10 — WALL EXHAUST FAN 27 9321-LL-3125 SH10 [24]

1H 40A #10 — WALL EXHAUST FAN 28 9321-LL-3125 SH10 [24]

1K 40A #10 — WALL EXHAUST FAN 29 9321-LL-3125 SH10 [24]

1M 40A #10 — WALL EXHAUST FAN 30 9321-LL-3125 SH10 [24]

2B 50A #8 — ROOF VENT FAN 26 9321-3125 SH11 [24]

2D 50A #8 — ROOF VENT FAN 27 9321-3125 SH11 [24]

2F 50A #8 — ROOF VENT FAN 28 9321-3125 SH11 [24]

2H 50A #8 — ROOF VENT FAN 29 9321-3125 SH11 [24]

2K 50A #8 — ROOF VENT FAN 210 9321-3125 SH11 [24]

2M 50A #8 — ROOF VENT FAN 211 9321-3125 SH11 [24]

3B 30A #12 — OIL VAPOR EXTRACTOR 9321-LL-3125 SH2 [24]

3D 30A #12 — B.F.P. SEAL INJECTION BOOSTER PUMP 22 9321-LL-3123 SH13 [25]

3F 20A #12 — TURBINE OIL CONDITIONER CIRCULATING PUMP 9321-LL-3125 SH6 [24]

3H 60A #8 — CLOSED LOOP STEAM CONDENSATE AIR EXHAUSTER 9321-LL-3125 SH7 [24]

3K 20A #12 — OIL STORAGE TANK CLEAN-UP PUMP 9321-LL-3125 SH8 [24]

3M 40A #12 — TURB. OIL RESERVOIR HEATER 9321-LL-3125 SH9 [24]

4E 100A #6 — BEARING LIFT PUMP 9321-LL-3125 SH12 [24]

4M 250A #4 — BEARING OIL PUMP 9321-LL-3125 SH5 [24]

5C — HEAT TRACING PANEL #22 9321-3256

5EL 60A #6 — 45 KVA HEAT TRACING TRANSFORMER 22 YARD AREA

1Ø-#10 (1W) — CONTACTOR SEE NOTE 3 — 125A — FUSED DISC. SW. C.S.T. RECTIFIER (EDC18) 9321-3256 — 20A — 90 — C.S.T. CATHODIC PROT. RECTIFIER (EPC12) 9321-3100 — LOCAL DISC. SW. C.S.T. RECTIFIER (EDC18) 9321-3100

(EPQ15) — L1 L2 N — 50AMP 50AMP NEUT — LOAD CENTER FOR N16 ANALYZER CABINET N16 ANNUNICATOR PANEL AND UNIT HEATERS DWG 253892

5M 250A #1 — TURNING GEAR OIL PUMP 9321-LL-3125 SH4 [24]

6C 15A #12 — STEAM DUMP OUTLET VALVE #1 (SEX-71) A207326

6F 15A #12 — STEAM DUMP OUTLET VALVE #3 (SEX-73) A207326

6J 15A #12 — STEAM DUMP OUTLET VALVE #5 (SEX-75) A207326

6LL 15A #12 — LUBE OIL BOOSTER PUMP — 9A

6LR 15A #12 — SLUDGE TNK TRANSFER PUMP — 9A — 3-1/C #8

6M — SPARE

5ER 60A — 3-1/C #2 — #4 — SPACE #8

3P 15A — AFW BUILDING ROOF FAN 217 9321-LL-3125 SH14 [24] — 5

3P 15A — AFW BUILDING WALL FAN 218 9321-LL-3125 SH14 [24] — 5

3P 15A — AFW BUILDING ROOF FAN 219 9321-LL-3125 SH14 [24] — 5

3P 15A — AFW BUILDING 9321-LL-3125 SH13 [24] — 10KW

3P 15A — AFW BUILDING 9321-LL-3125 SH13 [24] — 12.5KW

3P 15A — AFW BUILDING 9321-LL-3125 SH13 [24] — 12.5KW

#4 — MOTORIZED VALVES FOR CONDENSER WATER SODIUM HYPOCHLORITE BARS A223477 [24]

IB .2 #12 — M.O.V.#CA-4-21

IC .2 #12 — M.O.V.#CA-4-22

ID .2 #12 — M.O.V.#CA-4-23

IE .2 #12 — M.O.V.#CA-4-24

IF .2 #12 — M.O.V.#CA-4-25

IG .2 #12 — M.O.V.#CA-4-26

480V MOTOR CONTROL CENTER 22

(TURB. GEN. BLDG. 15'-0")

1D 40A #12 — ISOPHASE BUS CUBICLE FAN 21 9321-LL-3122 SH20 [24]

1F 40A #12 — ISOPHASE BUS CUBICLE FAN 23 9321-LL-3122 SH20 [24]

1H 40A #12 — ISOPHASE BUS CUBICLE FAN 25A 9321-LL-3122 SH20 [24]

1K 40A #12 — CARBON DIOXIDE UNIT IP2-S-000383 [24]

1ML 10A #8 — 8810 480V 208/120V — EDS36 FUSED SWITCH — #6

1MR 15A #12 — STEAM & WATER ANALYSIS SAMPLE PUMPS FEEDER [24]

2E 90A #2 — MAIN SEAL OIL PUMP 9321-LL-3122 SH11 [24]

2M 200A IEC 200A TYPE AJT 4/0 — CONDENSER VACUUM PUMP 21 23903 [25]

3B — SPARE

3D 30A — 3/0#2 — 3.5 KVA — MAIN GENERATOR HYDROGEN DRYER 1995MB1948 [24]

3F 30A #8 — RECIRCULATING SEAL OIL PUMP 9321-LL-3122 SH27 [24]

3H 100A #2 — WELDING RECEPTICLES (6) [24]

3K — SPACE

3M 15A #12 — B.F.P. TURBINE DRIP TANK PUMP 21 9321-LL-3123 SH23 [25]

4B — SPARE

4D 20A #12 — BF. PUMPS SEAL WATER DRAIN PUMP 9321-LL-3122 SH19 [25]

4F 15A #12 — RE-CING PIT SUMP PUMP 9321-LL-3122 SH18 [24]

4H 15A #12 — B.F.P. 21 GEARING 9321-LL-3122 SH17 [25]

4M 200A — TO SBD/APPENDIX R DIESEL GEN. 480V MCC TRANSFER SWITCH DWG. 4000865

5B 50A #10 — CLOSED LOOP SYSTEM CUDLING PUMP 21 9321-LL-3122 SH16 [25]

5D — SPARE

5FL 15A #10 — EXCITER CUBICLE HEATER 2100MC5856

5FR 30A #10 — GENEREX CUBICLE HEATER 2100MC5859 [24]

5H 60A #8 — HOTWELL DUMP PUMP 9321-LL-3122 SH12 [24]

5K — SPACE

5M 40A #12 — STEAM HEATING CONDENSATE RECEIVER PUMP 21 9321-LL-3122 SH18 [25]

6D 15A #12 — MS-6-2 REHEATER STEAM SHUT-OFF VALVE-21 9321-LL-3122 SH16 [24]

6H 15A #12 — MS-6-2 REHEATER STEAM SHUT-OFF VALVE-22 9321-LL-3122 SH16 [24]

6M 175A #4/0 — STATOR COOLING WATER PUMP MOTOR IP2 S-000047 [24]

7B — SPACE

7D 15A #12 — ROTARY BLOWER 9321-LL-3122 SH7 [24]

7M 200A #2 — B.F.P. OIL CONSOLE MAIN PUMP 21 9321-LL-3122 SH13 [36]

SYMBOLS

- SHAWMUT TYPE TRS
- CEFCO TYPE TRS
- ECONOMY FUSE CO. TYPE ECSR
- MOTOR CIRC. PROT
- DISCONNECT SWITCH
- SHAWMUT FUSE TYPE AJT CLASS J TIME DELAY CLASS J CURRENT LIMITING
- BREAKER
- THERMAL MAG. ELEMENT
- DRAWOUT DEVICE
- SHAWMUT FUSE TYPE A4J CLASS J CURRENT LIMITING FUSE
- 2 — FULL VOLTAGE NON-REVERSING STARTER, NUMBER INDICATES NEMA SIZE. (R) INDIC. REVERSING.
- 4 — MOTOR & HORSEPOWER

7	480V MCC 21	26	INTAKE STRUCTURE
8	480V MCC 22	29	SCREEN HOUSE UNIT NO.1
9	480V MCC 23	35	DE-ICING PUMPS PIT
10	480V MCC 24	44	TURB.BLDG. UNIT NO.1
11	480V MCC 25	36A	B.F.P. TURBINE-OIL CONSOLE
24	TURB.GEN.BLDG.	45	AUX. FW. PUMP HOUSE
25	HEATER BAY		

REFERENCE DWGS:

9321-3005	ONE LINE DIAGRAM 480V MCC'S 27 & 27A
9321-3006	ONE LINE DIAGRAM 480V MCC'S 26A & 26B
A208500	ONE LINE DIAGRAM 480V MCC'S 26AA & 26BB
A208507	ONE LINE DIAGRAM 480V MCC'S 28, 210
A208241	ONE LINE DIAGRAM 480V MCC'S 28A & 211
A249955	ONE LINE DIAGRAM 480V MCC'S 29 & 29A
A249956	ONE LINE DIAGRAM 480V MCC'S 24 & 24A
9321-3177	EXT W/D 480VAC MCC21
9321-3178	EXT W/D 480VAC MCC21
9321-3179	EXT W/D 480VAC MCC22
9321-3180	EXT W/D 480VAC MCC22
9321-3181	EXT W/D 480VAC MCC23
9321-3182	EXT W/D 480VAC MCC23
9321-3184	EXT W/D 480VAC MCC25
9321-3121	SWD 480VAC MCC21
9321-3122	SWD 480VAC MCC22
9321-3123	SWD 480VAC MCC23
9321-3125	SWD 480VAC MCC25

LEGEND:

SECTION — COMPARTMENT — IF — RIGHT SIDE(OR L-LEFT) — IER

NOTES:

1. CONNECTED LOAD 2-2 HP MTRS 3-3/4 HP MTRS AND 1-350VA, 480/120V, 1PH XFMR MAX OPERATING LOAD 1-2HP MTR 1-3/4 HP MTR & 1-350VA 1PH XFMR
2. CONNECTED LOAD 1-1 HP MTR , 1-5 HP AND 1-350VA 480/120V 1PH XFMR
3. FEED TO HT DISTRIBUTION PANEL 22 COMES THROUGH A CONTACTOR LOCATED IN EHT CONTROL CABINET 22. CONTACTOR CLOSES @47 DEG. F DECREASING, AND OPENS @53 DEG. INCREASING. FEED TO CST CATHODIC PROTECTION RECTIFIER IS TAKE FROM UPSTREAM OF THIS CONTACTOR. SEE DWG. 6366-3 AND 503438.

90

(ECE1)
480V MOTOR CONTROL CENTER 25A

(TURB. GEN. BLDG. 15'-0")

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CH'D	APP.
90	INCORPORATED EC-58740	07/30/15	SM		
REVISIONS					

DATE	CKR. REVIEW	SUPV.	DESIGN ENG	UE&C	DISC. ENG.	UE&C	ENG. MGR.	UE&C
APPROVALS								

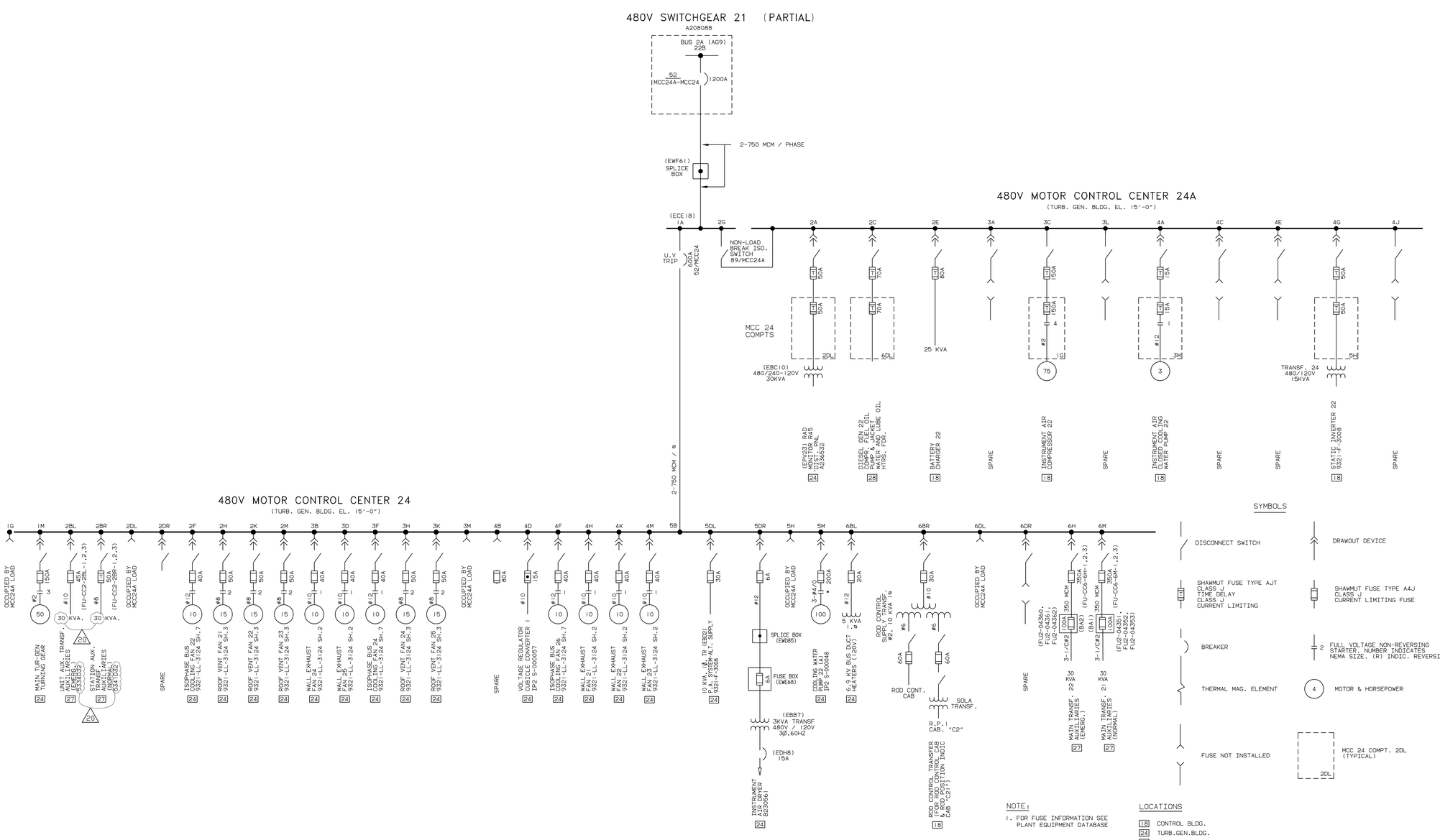
TITLE: ONE LINE DIAGRAM 480V MOTOR CONTROL CENTERS 21, 22, 23, 25 & 25A - UFSAR FIGURE No. 8.2-7

DRAWN BY I. WATKINS | SCALE NONE | REC'D

DWG. NO. 9321-F-3004-90 | DZ

Entergy Nuclear Northeast

STATION INDIAN POINT #2



REFERENCE DWGS:

9321-F-3004	ONE LINE DIAGRAM 480V MCC'S 21, 22, 23, 25 & 25A
9321-F-3005	ONE LINE DIAGRAM 480V MCC'S 27
9321-F-3006	ONE LINE DIAGRAM 480V MCC'S 26A & 26B
9321-F-3183	WIRING DIAGRAM MCC 24
A208500	ONE LINE DIAGRAM 480V MCC'S 26AA & 26BB
A208507	ONE LINE DIAGRAM 480V MCC'S 28, 29, 210
A208241	ONE LINE DIAGRAM 480V MCC'S 28A & 211
A249955	ONE LINE DIAGRAM 480V MCC'S 29 & 29A

COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CHK'D	APP.
20	INCORPORATED EC-54990	3/23/16	SM		

REVISIONS

TITLE: ONE LINE DIAGRAM
480V MCC 24 & 24A
- UFSAR FIGURE No. 8.2-7A

DRWN. BY K.FOLEY | SCALE NONE | REC'D

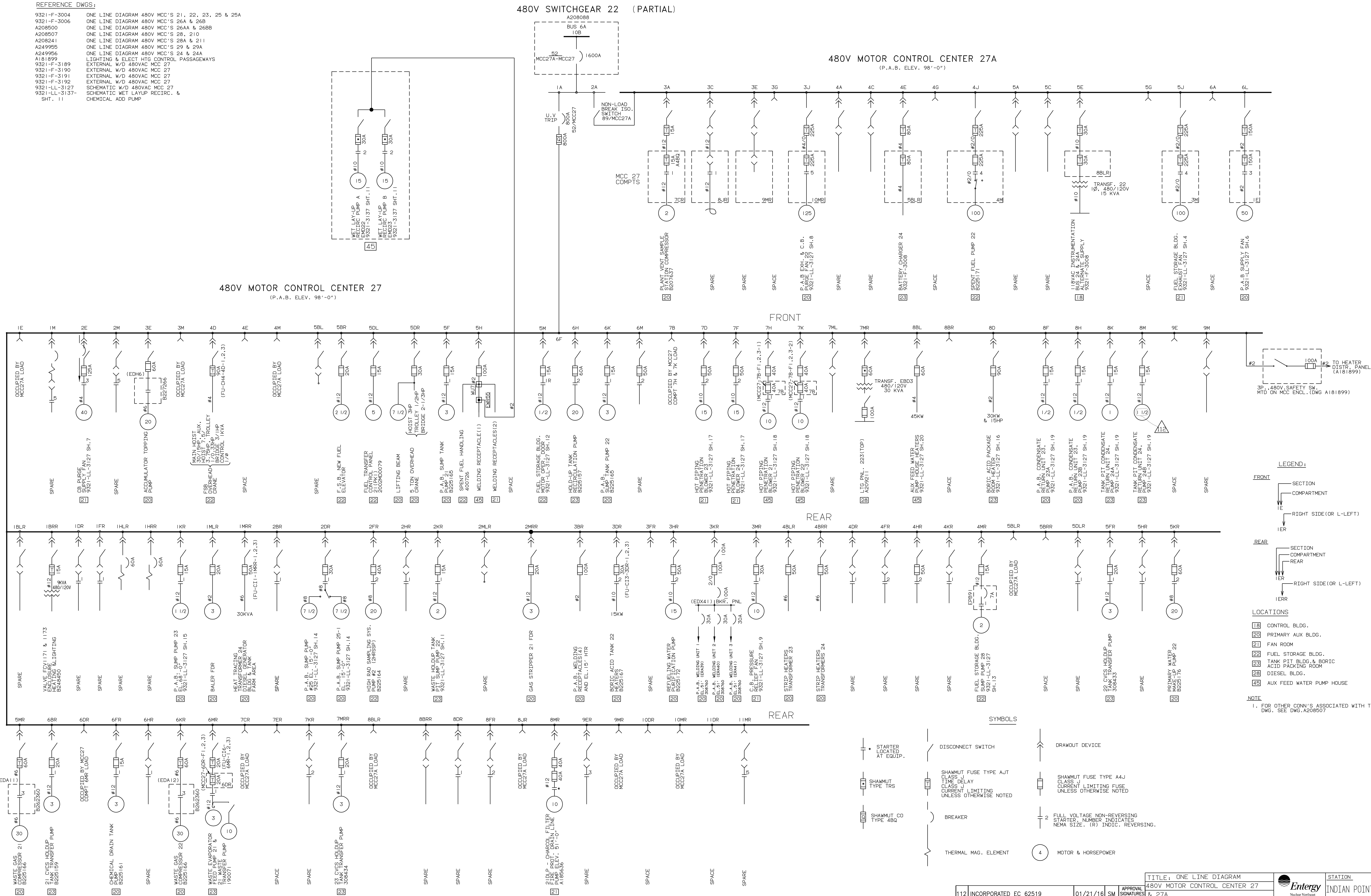
Entergy Nuclear Northeast

STATION
INDIAN POINT #2

DWG. NO. A249956-20 DZ

REFERENCE DWGS:

9321-F-3004	ONE LINE DIAGRAM 480V MCC'S 21, 22, 23, 25 & 25A
9321-F-3006	ONE LINE DIAGRAM 480V MCC'S 26A & 26B
A208500	ONE LINE DIAGRAM 480V MCC'S 26AA & 26BB
A208507	ONE LINE DIAGRAM 480V MCC'S 28, 210
A208241	ONE LINE DIAGRAM 480V MCC'S 28A & 211
A249955	ONE LINE DIAGRAM 480V MCC'S 29 & 29A
A249956	ONE LINE DIAGRAM 480V MCC'S 24 & 24A
A181899	LIGHTING & ELECT HTG CONTROL PASSAGEWAYS
9321-F-3189	EXTERNAL W/D 480VAC MCC 27
9321-F-3190	EXTERNAL W/D 480VAC MCC 27
9321-F-3191	EXTERNAL W/D 480VAC MCC 27
9321-F-3192	EXTERNAL W/D 480VAC MCC 27
9321-LL-3127	SCHEMATIC W/D 480VAC MCC 27
9321-LL-3137- SHT. 11	SCHEMATIC WET LAYUP RECIRC. & CHEMICAL ADD PUMP



LOCATIONS

18	CONTROL BLDG.
20	PRIMARY AUX BLDG.
21	FAN ROOM
22	FUEL STORAGE BLDG.
23	TANK PIT BLDG.& BORIC ACID PACKING ROOM
28	DIESEL BLDG.
45	AUX FEED WATER PUMP HOUSE

NOTE

1. FOR OTHER CONN'S ASSOCIATED WITH THIS DWG. SEE DWG.A208507

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
112	INCORPORATED EC 62519	01/21/16	SM	APPROVAL SIGNATURES ON FILE	

REVISIONS

TITLE: ONE LINE DIAGRAM 480V MOTOR CONTROL CENTER 27 & 27A

Entergy Nuclear Northeast

STATION: INDIAN POINT #2

DRWN. BY I. WATKINS | SCALE NONE | REC'D

DWG. NO. 9321-F-3005-112 DZ

480V SWITCHGEAR 21 (PARTIAL)

A208088

BUS 5A 16B — 52/MCC8 — 600A

BUS 2A 24C — 52/MCC10 — 600A

1-750MCM/ø

2-#4/0 PER ø

(EWD9)

MCC28 FEEDER BREAKER 9321-3167 — 52/MCC28 — 400A

PENETRATION H69

2-#4/0 PER Ø

TO UNIT #3
480V SWGR BUS 2A
SEE DWG.#9321-F-30053

2-750MCM/ø

KEY INTERLOCK

480V MOTOR CONTROL CENTER 210
(SERVICE BOILER AREA)

1B 1D 1F 1H 1K 1M 2E 2G 2J 2M 3C 3E 3M 4B 4D 4G 4M 5B 5D 5E 5M 6C 6E 6M 7C 7E 7M

50A

(COMPT. 1H) 1ø, 480/240/120V
(COMPT. 1K) 1ø, 480/240/120V
(COMPT. 1M) 1ø, 480/240/120V
3ø, 480-208/120V, 7.5 KVA TRANSFORMER (COMBINATION OF THREE SINGLE PHASE TRANSFORMERS).

LIGHTING PNL 225

SPARE	SPACE	LTG PANEL 225 9321-3013	SERVICE BOILER FUEL PUMP 21 FROM MCC 21 CONTROL PNL. 21	SERVICE BOILER FORCED DRAFT FAN 21 VIA SERVICE BOILERS CONTROL PNL. 22	SPACE	BOILER PURGE VENT. FAN 21 (RETIRED)	BOILER PURGE VENT. FAN 21 (RETIRED)	SERVICE BOILERS FEED PUMP 21 9321-LL-3120 SH.2 (RETIRED)	SERVICE BOILERS FUEL OIL PUMP 21 9321-LL-3120 SH.3	SERVICE BOILERS FUEL OIL PUMP 22 9321-LL-3120 SH.3	SPACE	SERVICE BOILERS FUEL OIL PUMP 23 9321-LL-3120 SH.3	SPARE	SPARE	ROOF VENT FAN 2.13 (BOILER 21 F22 AREA)	ROOF VENT FAN 2.14 (BOILER 21 F22 AREA)	SERVICE BOILERS FEED PUMP 22 9321-LL-3120 SH.2 (RETIRED)	ROOF VENT FAN 2.15 (BOILER 21 F22 AREA)	ROOF VENT FAN 2.16 (BOILER 21 F22 AREA)	SERVICE BOILERS FEED PUMP 23 9321-LL-3120 SH.2 (RETIRED)
44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44

480V MOTOR CONTROL CENTER 28
(CONTAINMENT BLDG)

1B 1E 1K 1M 2BL 2BR 2D 2F 2H 2K 2M 3BL 3BP 3D 3F 3H 3K 3M 4C 4E 4M

WELDING RECEPTACLES (4)	REACTOR COOLANT DRAIN PUMP 21	REACTOR COOLANT DRAIN PUMP 22	IODINE FILTER AND FAN 21 9321-LL-3128 SH.2	NOT USED MANIPULATOR CRANE IS CONNECTED TO CROM FAN 21 RECEPTACLE FOR RFO 2R15	IN CORE INSTRUMENTATION DRIVE MOTOR FOR (6 @ 1/8HP)	CONTROL ROD DRIVE COOLING FAN 21 AND MANIPULATOR CRANE CONNECTED TO RECEPTACLE FOR RFO 2R15	CONTROL ROD DRIVE COOLING FAN 22 A208218	CONTROL ROD DRIVE MOTOR FAN 23 A208218	CONTROL ROD DRIVE MOTOR FAN 24 A208218	IODINE FILTER AND FAN 22 9321-LL-3128 SH.2	ROD CLUSTER CONT CHANGE FIXT. CONTACTOR 9321-3193	HEAD BOLT TENSIONER HOIST 9321-3193	FUEL TRANSFER PANEL 2218(M2) 2008M06080	R.C.P.21 LIFT PUMP BEARING	R.C.P.22 LIFT PUMP BEARING	R.C.P.23 LIFT PUMP BEARING	R.C.P.24 LIFT PUMP BEARING	STEAM GENERATOR EXHAUST FAN 21	STEAM GENERATOR EXHAUST FAN 22	SUMP PUMP #29 EL 46'-0"	REACTOR CAVITY SUMP PUMP #1 A208814 AND 9321-LL-3128 SH.4A	SPARE	MAIN HOIST 60HP AUX HOIST 40HP TROLLEY 4HP BRIDGE 2(25HP) TRANSF 10KVA
100A	80A	100A	40A		30A	80A	80A	80A	80A	40A	15A		20A	40A	40A	40A	40A	30A	15A	15A	30A			225A
#4	#10	#10	#12	#12	#8	#8	#8	#8	#8	#12	#12	#12	#12	#12	#12	#12	#12			#12				#4/0
25	30	10			30	30	30	30	10		5	10	10	10	10	5	5	7.5	1.9			
						*2 28A TO MCC 28A	*2 TO MCC 28A	*2 TO MCC 28A	*2 TO MCC 28A										(ECB10) STARTER			
19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19

SYMBOLS

- SHAWMUT FUSE TYPE AJT CLASS J TIME DELAY CLASS J CURRENT LIMITING
- DRAWOUT TYPE FUSIBLE DE-ION SWITCH
- CLASS J CURR. LIMITING FUSE FULL VOLTAGE NON REVESING STR NUMBER INDICATES SIZE (R) INDIC. REVERSING
- 4 — ENCIRCLED NUMBER INDICATES MOTOR HORSEPOWER
- S — SOLATRON LINE VOLTAGE REG. 3HP
- WHSE AB.DE-ION TRI PAC BKR.
- THERMAL MAG. ELEMENT
- CURRENT LIMITER
- FULL VOLTAGE NON REVERSING STARTER NUMBER INDICATES SIZE
- 3 — ENCIRCLED NUMBER INDICATES MOTOR HORSEPOWER
- THERMAL OVERLOAD
- SHAWMUT TYPE TRS

3	480V SWGR 21	23	TANK PIT BLDG.& BORIC ACID PACKING ROOM
4	480V SWGR 22	24	TURB.GEN.BLDG.
7	480V MCC 21	25	HEATER BAY
8	480V MCC 22	26	INTAKE STRUCTURE
9	480V MCC 23	27	TRANSF. YARD
10	480V MCC 24	28	DIESEL BLDG.
11	480V MCC 25	29	SCREEN HOUSE UNIT #1
13	480V MCC 27	35	DEICING PUMPS PIT
14	480V MCC 28	44	TURBINE BLDG. UNIT #1
18	CONTROL BLDG.	45	AUX FEED WATER PUMP HOUSE
19	CONTAINMENT BLDG.	49	480V MCC 29
20	PRIMARY AUX BLDG.		
21	FAN ROOM		
22	FUEL STORAGE BLDG.		

LEGEND:

SECTION
COMPARTMENT
1E
RIGHT SIDE(OR L-LEFT)
1ER

REFERENCE DWGS.

9321-F-3004	ONE LINE DIAGRAM 480V MCC'S 21, 22, 23, 25 & 25A
9321-F-3005	ONE LINE DIAGRAM 480V MCC'S 27 & 27A
9321-F-3006	ONE LINE DIAGRAM 480V MCC'S 26A & 26B
A208500	ONE LINE DIAGRAM 480V MCC'S 26AA & 26BB
A208241	ONE LINE DIAGRAM 480V MCC'S 28A & 21I
A249955	ONE LINE DIAGRAM 480V MCC'S 29 & 29A
A249956	ONE LINE DIAGRAM 480V MCC'S 24 & 24A
9321-F-3193	EXTERNAL CONN'S 480V MCC 28
9321-F-3175, 3176	EXTERNAL CONN'S 480V MCC 210
9321-LL-3128	SCHEM. W/D CONN'S 480V MCC 28
9321-LL-3120	SCHEM. W/D CONN'S 480V MCC 210

NOTES

- • LOCATED ADJACENT TO MCC 28
- •1 TERMINAL BLOCKS IN BOX "XF1"
- •2 PLUG AND RECEPTACLE

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
41	INCORPORATED EC74909	11/28/17	SM		

REVISIONS — APPROVAL SIGNATURES ON FILE

TITLE: ONE LINE DIAGRAM,
480 VAC MCC'S 28 & 210
- UFSAR FIGURE No. 8.2-9

Entergy Nuclear Northeast

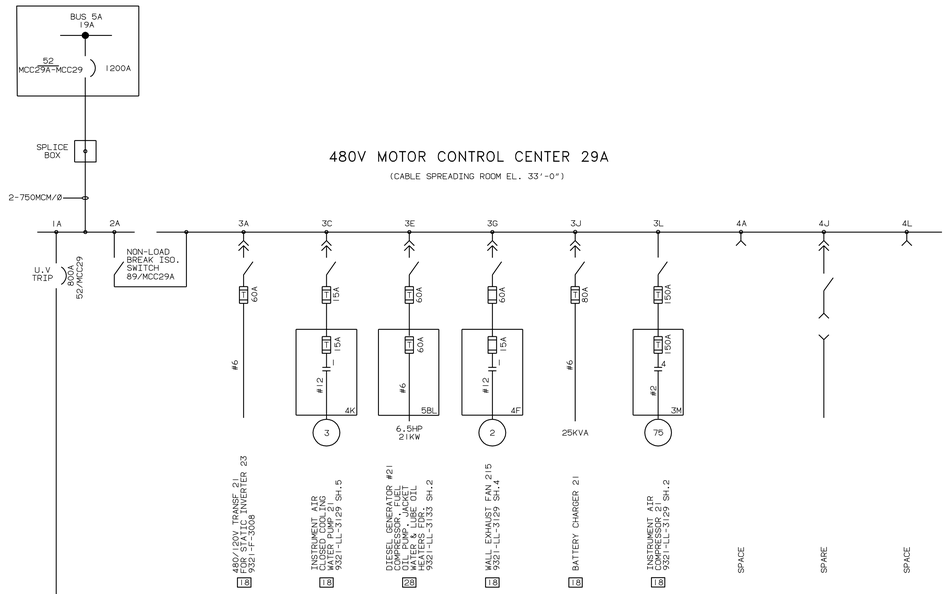
STATION: INDIAN POINT #2

DRWN. BY: IW/TH | SCALE: NONE | REC'D

DWG. NO. A208507-41 DZ

480V SWITCHGEAR 21 (PARTIAL)

A208088

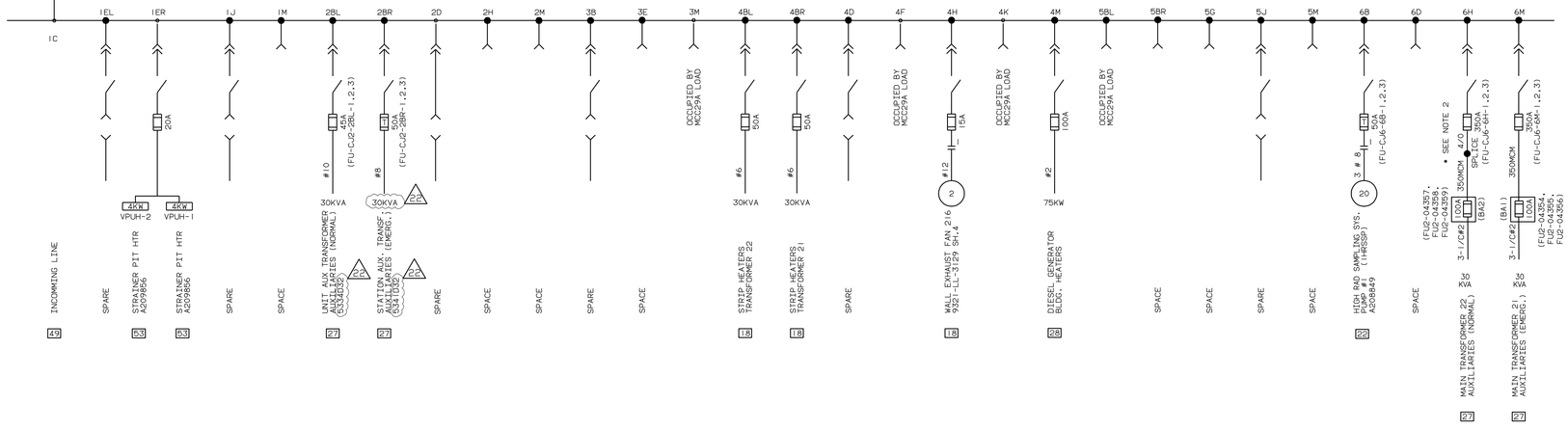


480V MOTOR CONTROL CENTER 29A

(CABLE SPREADING ROOM EL. 33'-0")

480V MOTOR CONTROL CENTER 29

(CABLE SPREADING ROOM EL. 33'-0")



SYMBOLS

- DISCONNECT SWITCH
- DRAWOUT DEVICE
- SHAWMUT FUSE TYPE AJT CLASS J TIME DELAY CLASS J CURRENT LIMITING
- SHAWMUT FUSE TYPE A4J CLASS J CURRENT LIMITING FUSE
- BREAKER
- 2 FULL VOLTAGE NON-REVERSING STARTER, NUMBER INDICATES NEMA SIZE. (R) INDIC. REVERSING.
- THERMAL MAG. ELEMENT
- (4) MOTOR & HORSEPOWER
- FUSE NOT INSTALLED

LOCATIONS

- 18 CONTROL BLDG.
- 27 TRANSF. YARD
- 28 DIESEL BLDG.
- 49 480V MCC 29
- 53 SERVICE WATER VALVE PIT
- 22 FUEL STORAGE BLDG.

LEGEND:

FRONT
- SECTION
- COMPARTMENT
- RIGHT SIDE(OR L-LEFT)

1E
1ER

REFERENCE DWGS:

9321-F-3004	ONE LINE DIAGRAM 480V MCC'S 21, 22, 23, 25 & 25A
9321-F-3005	ONE LINE DIAGRAM 480V MCC'S 27 & 27A
9321-F-3006	ONE LINE DIAGRAM 480V MCC'S 26A & 26B
A208500	ONE LINE DIAGRAM 480V MCC'S 26AA & 26BB
A208507	ONE LINE DIAGRAM 480V MCC'S 28, 210
A208241	ONE LINE DIAGRAM 480V MCC'S 28A & 211
A249956	ONE LINE DIAGRAM 480V MCC'S 24 & 24A
9321-F-3194	EXTERNAL W/D 480V MCC29
9321-LL-3129	SCHEMATIC W/D 480V MCC29

NOTES:

1. THIS DWG. SUPERSEDES IN PART CON EDISON (A208507)
2. FUTURE EXPANSION OF CIRCUIT 6H OF MCC29 IS LIMITED BY 200AMP DISCONNECT SWITCH
3. FOR FUSE INFORMATION SEE PLANT EQUIPMENT DATABASE

REV	DESCRIPTION	DATE	BY	CK'D	APP.
22	INCORPORATED EC-54990	3/23/16	SM	APPROVAL SIGNATURES ON FILE	

REVISIONS

TITLE: ONE LINE DIAGRAM. 480V AC MCC 29 & 29A

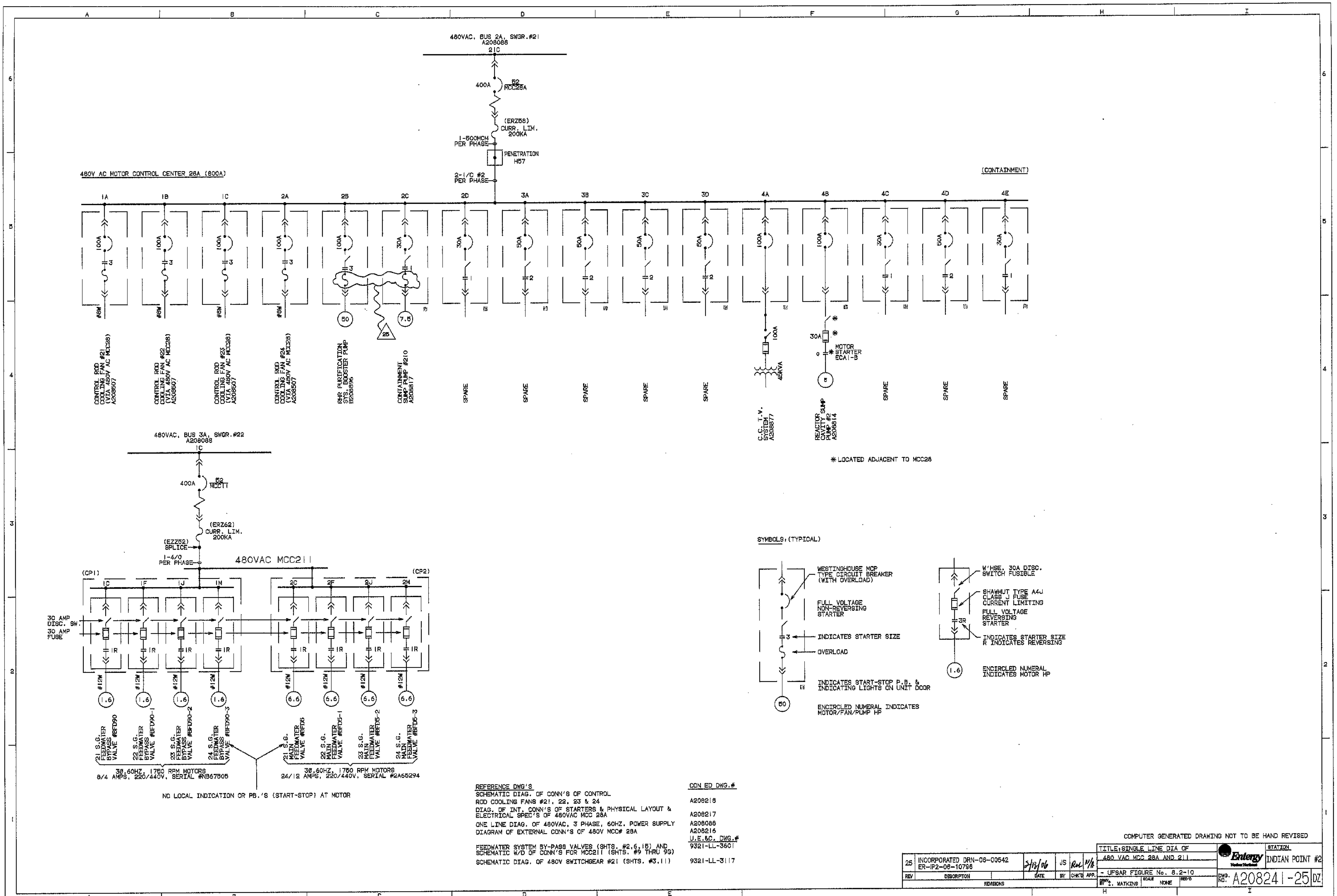
- UFSAR FIGURE No. 8.2-9A

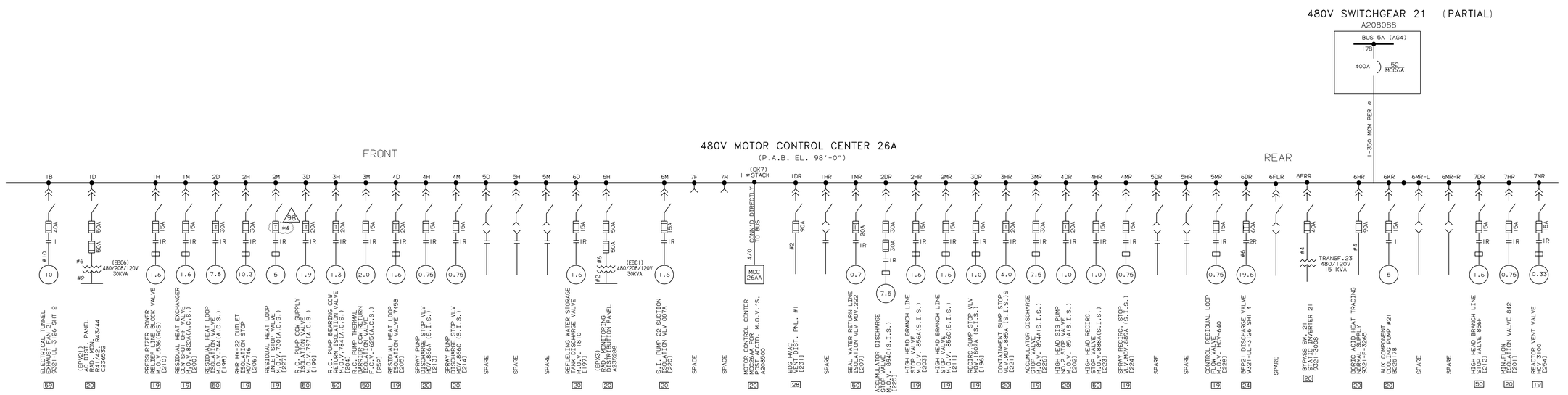
DRWN. BY K.FOLEY | SCALE NONE | REC'D

Entergy Nuclear Northeast

STATION: INDIAN POINT #2

DWG. NO. A249955-22 DZ


480VAC, BUS 2A, SWGR.#21
A208088
21C
400A
52
MCC28A
(ERZ58)
CURR. LIM.
200KA
1-500MCM
PER PHASE
PENETRATION
H57
2-1/C #2
PER PHASE
480V AC MOTOR CONTROL CENTER 28A (800A)
(CONTAINMENT)
CONTROL ROD COOLING FAN #21 (VIA 480V AC MCC28) A208507
CONTROL ROD COOLING FAN #22 (VIA 480V AC MCC28) A208507
CONTROL ROD COOLING FAN #23 (VIA 480V AC MCC28) A208507
CONTROL ROD COOLING FAN #24 (VIA 480V AC MCC28) A208507
RHR PURIFICATION SYS. BOOSTER PUMP B208896
CONTAINMENT SUMP PUMP #210 A208817
SPARE
C.C. T.V. SYSTEM A208877
45KVA
MOTOR STARTER ECA1-B
REACTOR CAVITY SUMP PUMP #2 A208814
* LOCATED ADJACENT TO MCC28
480VAC, BUS 3A, SWGR.#22
A208088
1C
400A
52
MCC211
(ERZ62)
CURR. LIM.
200KA
(EZZ62)
SPLICE
1-4/0
PER PHASE
480VAC MCC211
(CP1)
(CP2)
30 AMP DISC. SW.
30 AMP FUSE
21 S.G. FEEDWATER BYPASS VALVE #BFD90
22 S.G. FEEDWATER BYPASS VALVE #BFD90-1
23 S.G. FEEDWATER BYPASS VALVE #BFD90-2
24 S.G. FEEDWATER BYPASS VALVE #BFD90-3
21 S.G. MAIN FEEDWATER VALVE #BFD5
22 S.G. MAIN FEEDWATER VALVE #BFD5-1
23 S.G. MAIN FEEDWATER VALVE #BFD5-2
24 S.G. MAIN FEEDWATER VALVE #BFD5-3
3Ø,60HZ, 1750 RPM MOTORS
8/4 AMPS, 220/440V, SERIAL #NB67805
3Ø,60HZ, 1750 RPM MOTORS
24/12 AMPS, 220/440V, SERIAL #2A65294
NO LOCAL INDICATION OR PB.'S (START-STOP) AT MOTOR
SYMBOLS:(TYPICAL)
WESTINGHOUSE MCP TYPE CIRCUIT BREAKER (WITH OVERLOAD)
FULL VOLTAGE NON-REVERSING STARTER
INDICATES STARTER SIZE
OVERLOAD
INDICATES START-STOP P.B. & INDICATING LIGHTS ON UNIT DOOR
ENCIRCLED NUMERAL INDICATES MOTOR/FAN/PUMP HP
W'HSE. 30A DISC. SWITCH FUSIBLE
SHAWMUT TYPE A4J CLASS J FUSE CURRENT LIMITING
FULL VOLTAGE REVERSING STARTER
INDICATES STARTER SIZE R INDICATES REVERSING
ENCIRCLED NUMERAL INDICATES MOTOR HP
REFERENCE DWG'S
CON ED DWG.#
SCHEMATIC DIAG. OF CONN'S OF CONTROL ROD COOLING FANS #21, 22, 23 & 24 A208218
DIAG. OF INT. CONN'S OF STARTERS & PHYSICAL LAYOUT & ELECTRICAL SPEC'S OF 480VAC MCC 28A A208217
ONE LINE DIAG. OF 480VAC, 3 PHASE, 60HZ. POWER SUPPLY A208088
DIAGRAM OF EXTERNAL CONN'S OF 480V MCC# 28A A208216
U.E.&C. DWG.#
FEEDWATER SYSTEM BY-PASS VALVES (SHTS. #2,6,15) AND SCHEMATIC W/D OF CONN'S FOR MCC211 (SHTS. #9 THRU 9G) 9321-LL-3601
SCHEMATIC DIAG. OF 480V SWITCHGEAR #21 (SHTS. #3,11) 9321-LL-3117
COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED
25 INCORPORATED DRN-06-00542 ER-IP2-06-10796 5/12/06 JS
REV DESCRIPTION DATE BY CHK'D APP.
REVISIONS
TITLE: SINGLE LINE DIA OF 480 VAC MCC 28A AND 211
- UFSAR FIGURE No. 8.2-10
S. WATKINS
SCALE NONE
Entergy
STATION INDIAN POINT #2
DWG. NO. A208241-25
DZ



SYMBOLS

- DISCONNECT SWITCH
- DRAWOUT DEVICE
- SHAWMUT TYPE TRS
- SHAWMUT FUSE TYPE AJT CLASS J TIME DELAY CURRENT LIMITING FUSE
- SHAWMUT FUSE TYPE A4J CLASS J CURRENT LIMITING FUSE
- BUSSMAN TYPE LPN-RK
- BREAKER
- 2 FULL VOLTAGE NON-REVERSING STARTER. NUMBER INDICATES NEMA SIZE. (R) INDIC. REVERSING. (S&F) INDICATE SLOW & FAST.
- THERMAL MAG. ELEMENT
- (4) MOTOR & HORSEPOWER

S SAFETY INJECTION SIGNAL
T TRIP OR CLOSE ON HIGH CONTAINMENT PRESSURE
SIS SAFETY INJECTION SYSTEM
ACS AUXILIARY COOLANT SYSTEM
RCS REACTOR COOLANT SYSTEM

[17] CONTROL ROOM PANEL
[18] CONTROL BUILDING
[19] CONTAINMENT BUILDING
[20] PRIMARY AUX. BUILDING
[24] TURBINE GENERATOR BUILDING
[26] INTAKE STRUCTURE
[28] DIESEL GENERATOR BUILDING
[50] PENETRATION TUNNEL
[59] ELECTRICAL TUNNEL

NOTES:

1. PANELS ARE TYPE NEB
2. ALL FEEDERS SHALL BE #12 UNLESS OTHERWISE INDICATED
3. ALL REFERENCES TO DWG. NUMBERS IN [ ] REPRESENT THE SCHEMATIC WIRING DIAGRAM (SMD#).
*4. FOR FUSE INFORMATION, SEE PLANT EQUIPMENT DATABASE.

98

REFERENCE DWGS:

9321-F-3004	ONE LINE DIAGRAM 480V MCC'S 21, 22, 23, 25 & 25A
9321-F-3005	ONE LINE DIAGRAM 480V MCC 27
A208500	ONE LINE DIAGRAM 480V MCC'S 26AA & 26BB
A208507	ONE LINE DIAGRAM 480V MCC'S 28, 210
A208241	ONE LINE DIAGRAM 480V MCC'S 28A & 211
A249955	ONE LINE DIAGRAM 480V MCC'S 29 & 29A
A249956	ONE LINE DIAGRAM 480V MCC'S 24 & 24A
9321-F-3185	EXTERNAL WIRING DIAGRAM MCC 26A
9321-F-3186	EXTERNAL WIRING DIAGRAM MCC 26A
9321-F-3187	EXTERNAL WIRING DIAGRAM MCC 26B
9321-F-3188	EXTERNAL WIRING DIAGRAM MCC 26B
9321-F-3208	EXTERNAL WIRING DIAGRAM MCC'S 26A & 26B
9321-LL-3126	SCHEMATIC WIRING DIAGRAM MCC'S 26A & 26B

LEGEND:

FRONT
- SECTION
- COMPARTMENT
- 1E
- RIGHT SIDE(OR L-LEFT)
- 1E-R

REAR
- SECTION
- COMPARTMENT
- REAR
- 1ER
- RIGHT SIDE(OR L-LEFT)
- 1ER-R

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CHK'D	APP.
98	INCORPORATED EC59435	8/20/15	SM		

REVISIONS

INDIAN POINT ENERGY CENTER – UNIT 2

SINGLE LINE DIAGRAM
480V MCC 26A AND 26B

Entergy Nuclear Northeast

DWG NO. 9321-F-3006-98 DZ

SCALE — SHEET

480V SWITCHGEAR 22 (PARTIAL)
A208088

BUS 3A
2A

600A — 52 MCC6C

2-750 MCM PER Ø

480V MOTOR CONTROL CENTER 26C

(SPREADING ROOM IN CONTROL BUILDING - EL. 33')

1N (ECQ2)

1A (ECQ1)	2B (ECQ3)	3A (ECQ4)	3F (ECQ5)	3H (ECQ6)	3N (ECQ7)	4A (ECR1)	4F (ECR2)	4H (ECR3)	4N (ECR12)	5A (ECR6)	5F (ECR5)	5L (ECR4)	6A (ECR8)	6C (ECR9)	6H (ECR10)	6N (ECR11)
AJT 225A	225A	AJT 50A	50A	AJT 60A	50A	15A	50A			15A		175A				
4	5	2		2	2 (2 SPEED)	1R		1	3	1	1			2	2	2
100	125	15KW		20	15/7.5	0.5				2						
SPENT FUEL PUMP 21 IP2--S-000310	PAB EXHAUST FAN 21/ PAB. PURGE FAN. IP2--S-000259	BORIC ACID TANK 21 HEATERS IP2--S-000316	BATTERY CHARGER 23 9321-F-3008	PRIMARY WATER MAKE-UP PUMP 21 IP2--S-000317	BORIC ACID TRANSFER PUMP 21 IP2--S-000256	VOLUME CONTROL TANK DISCHARGE VLV LCV-112C IP2--S-000255	SPARE	SPARE	WALL EXHAUST FAN 213 9321-LL-3129 SH.4	SPARE	DIESEL GENERATOR VENT. DISTR. PANEL 2 IP2--S-000231	SPARE	SPARE	SPARE	SPARE	
22	21	20	18	20	20	20			18		28					

15A, 15A → 13

(EPZ28)
(CCR FAN ROOM EL.72'0")
CCR VENT. PWR. DIST. PNL. 21

1D (CVDP-21A) — 1H (CVDP-21B) — 1M (CVDP-21C)

1A

1D (CVDP-21A)	1H (CVDP-21B)	1M (CVDP-21C)
25A	25A	6A
1		1Ø, 1000VA 480/120V
		10A
7.5	7.5	
BOOSTER FAN 21 IP2--S-00026I	BACK-UP VENT FAN IP2--S-000258	120V AC DIST. PNL. IP2--S-000273
18	18	18

SYMBOLS

- DISCONNECT SWITCH
- DRAWOUT DEVICE
- SHAWMUT FUSE TYPE AJT CLASS J TIME DELAY CLASS J CURRENT LIMITING
- SHAWMUT FUSE TYPE A4J CLASS J CURRENT LIMITING FUSE
- BREAKER
- 2 — FULL VOLTAGE NON-REVERSING STARTER. NUMBER INDICATES NEMA SIZE. (R) INDIC. REVERSING. (S&F) INDICATE SLOW & FAST.
- THERMAL MAG. ELEMENT
- 4 — MOTOR & HORSEPOWER

LEGEND:

SECTION
COMPARTMENT
1A
COMPARTMENT NODE
(ECQ1)

- 18 CONTROL BLDG.
- 20 PRIMARY AUX BLDG.
- 21 FAN ROOM
- 22 FUEL STORAGE BLDG.
- 28 DIESEL BLDG.

NOT USED

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
13	INCORPORATED EC49693	3/11/14	LH	APPROVAL SIGNATURES ON FILE	

REVISIONS

COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED

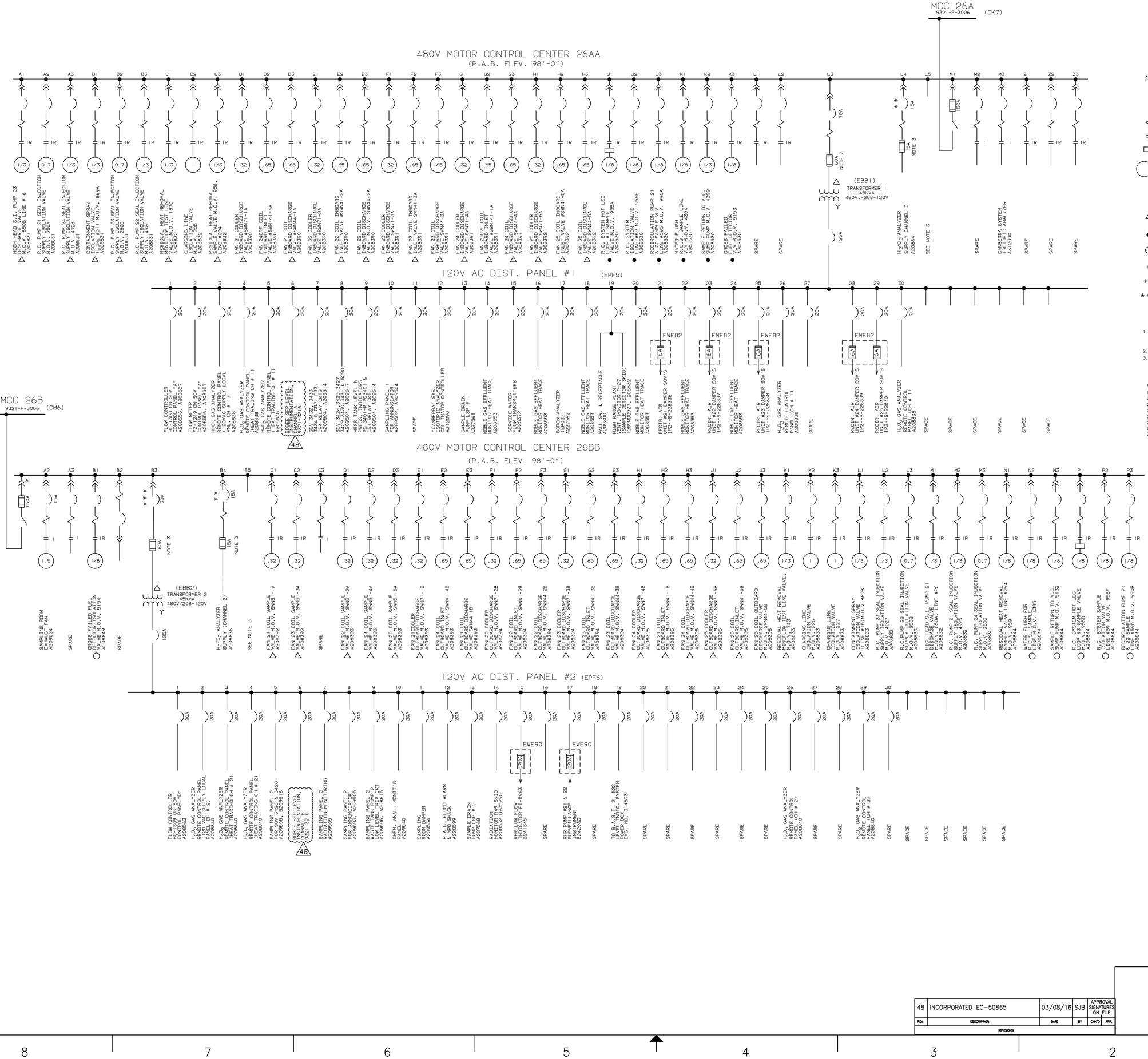
TITLE: SINGLE LINE DIAGRAM
480V MCC 26C & CCR VENT. DIST.
PANEL 21
- UFSAR FIGURE No. 8.2-11A

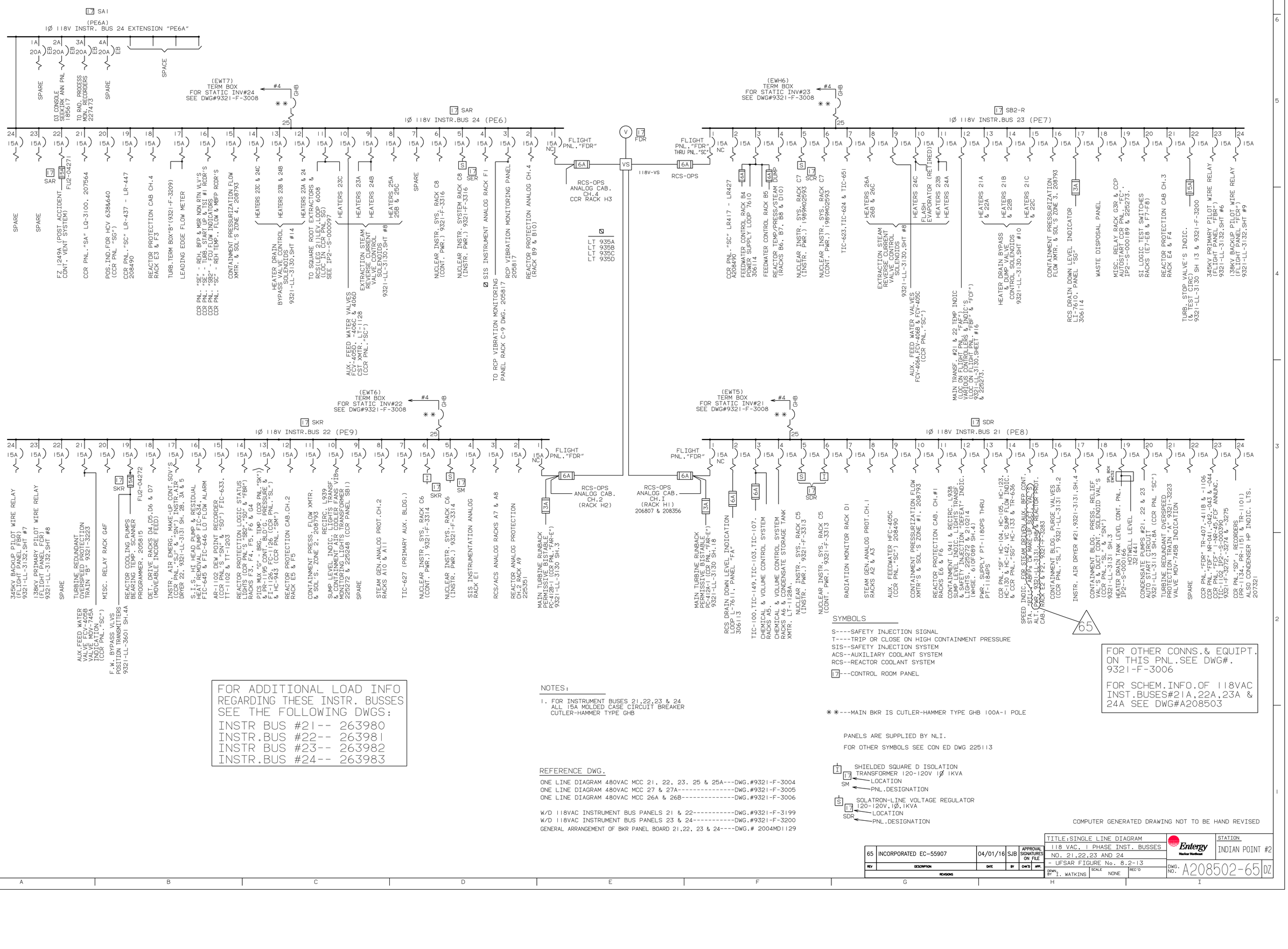
DRWN. BY K.FOLEY | SCALE NONE | REC'D

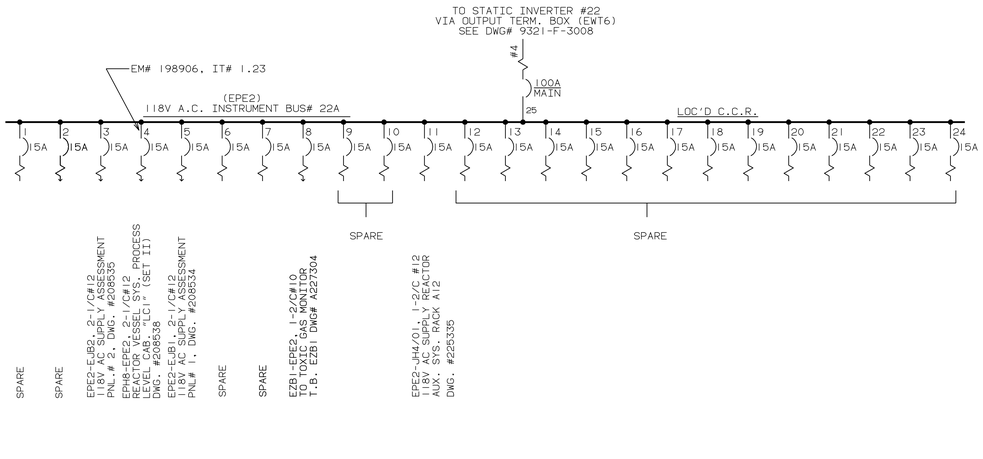
Entergy Nuclear Northeast

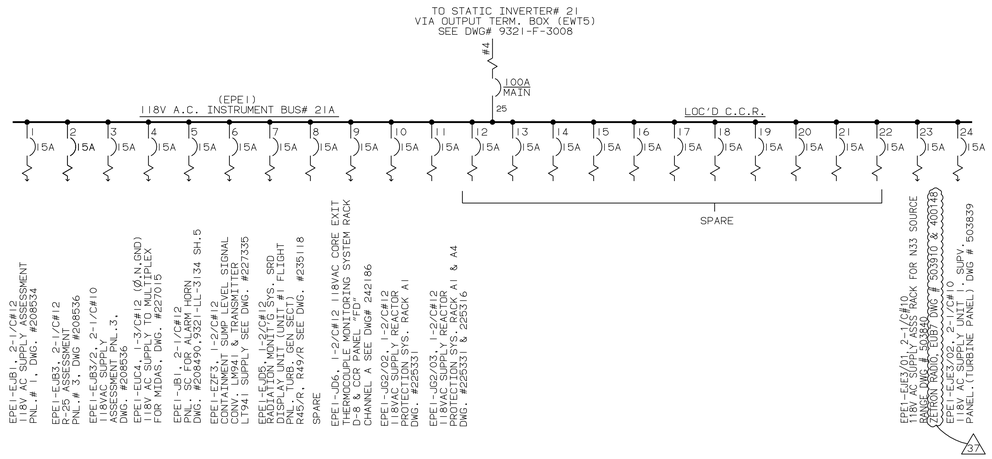
STATION: INDIAN POINT

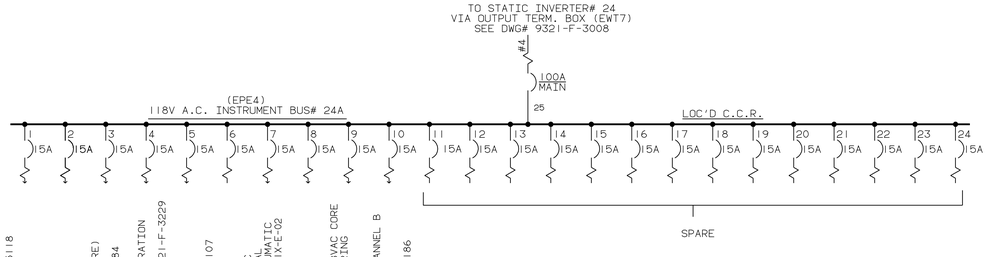
DWG. NO. B248513-13 DZ

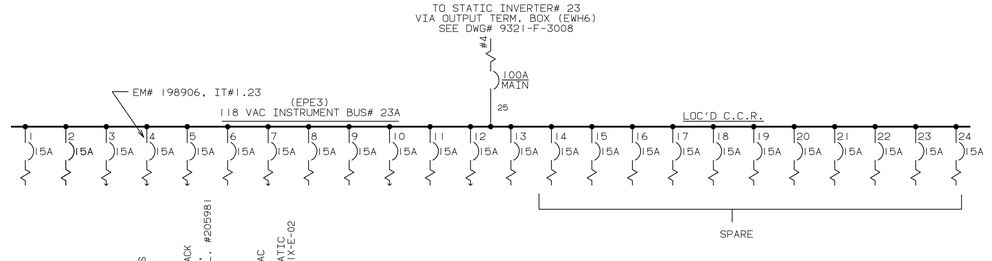

480V MOTOR CONTROL CENTER 26AA
(P.A.B. ELEV. 98'-0")
MCC 26A
9321-F-3006 (CK7)
120V AC DIST. PANEL #1 (EPF5)
MCC 26B
9321-F-3006 (CM6)
480V MOTOR CONTROL CENTER 26BB
(P.A.B. ELEV. 98'-0")
120V AC DIST. PANEL #2 (EPF6)
(EBB1) TRANSFORMER 1 45KVA 480V./208-120V
(EBB2) TRANSFORMER 2 45KVA 480V/208-120V
EWE82
EWE90
SYMBOLS
DRAWOUT CIRC.BKR STARTER TYPE UNIT
ALL CIRC. BKR'S ARE MOLDED CASE TYPE SEE NOTE 1
THERMAL OVERLOAD
FULL VOLTAGE NON-REVERSING STARTER NUMERAL INDICATES SIZE (R-INDICATES REVERSING)
CONTAINMENT PENETRATION
ENCIRCLED NUMERALS INDICATE MOTOR HORSEPOWER
△ – INDICATES M.O.V. TO BE PADLOCKED, WITH CONTROL SW. (CLOSE-OPEN) AND 2 INDIC. LTS.(GREEN-RED) FOR EACH ONE.
● – INDICATES CONTROL FROM SAMPLING PNL.#1 DWG.#A209502
○ – INDICATES CONTROL FROM SAMPLING PNL.#2 DWG.#A209503
✳ – CIRC. BKR,KLOCKNER-MOELLER TYPE NZM H9-250
✳✳ – CIRC. BKR,KLOCKNER-MOELLER TYPE NZM H6-63
✳✳✳ – CIRC. BKR,KLOCKNER-MOELLER TYPE NZM H6-100
NOTES:
1. EXCEPT AS NOTED, ALL BREAKERS ARE KLOCKNER-MOELLER TYPE NZM69, WITH ADJUSTABLE TRIP SETTINGS. FOR INDIVIDUAL BREAKER INFORMATION, REFER TO INDUS BILL OF MATERIALS.
2. REFER TO EDB FOR FUSE INFORMATION.
3. FUSES MOUNTED IN COMPT. L5 FOR MCC 26AA AND COMPT. B5 IN MCC26BB
REFERENCE DWG:
9321-F-3006 ONE LINE DIAGRAM 480V MCC'S 26A & 26B
208523 MCC 26AA EXTERNAL W/D
208524 MCC 26AA EXTERNAL W/D
208525 MCC 26BB EXTERNAL W/D
208526 MCC 26BB EXTERNAL W/D
208532 120VAC DIST. PNL'S 1&2 EXTERNAL W/D
208397 MCC 26AA & MCC 26BB EXTERNAL W/D
256927 M.O.V INFO. -1995 REFUEL OUTAGE
255880 M.O.V. INFOMATION
INDIAN POINT ENERGY CENTER – UNIT 2
ONE LINE DIAGRAM FOR 480VAC MCC–26AA AND MCC–26BB & 120VAC DISTRIBUTION PANELS 1 & 2
Entergy Nuclear Northeast
DWG NO. 208500
REV 48
SCALE NONE
SHEET
48 INCORPORATED EC-50865 03/08/16 SJB
REV DESCRIPTION DATE BY CH'D APP.
APPROVAL SIGNATURES ON FILE
REVISIONS


(PE6A)
Ø 118V INSTR. BUS 24 EXTENSION "PE6A"
SPACE
(EWT7) TERM BOX FOR STATIC INV#24 SEE DWG#9321-F-3008
(EWH6) TERM BOX FOR STATIC INV#23 SEE DWG#9321-F-3008
Ø 118V INSTR.BUS 24 (PE6)
Ø 118V INSTR.BUS 23 (PE7)
FLIGHT PNL."FDR"
RCS-OPS ANALOG CAB. CH.4 CCR RACK H3
RCS-OPS
118V-VS
FDR
(EWT6) TERM BOX FOR STATIC INV#22 SEE DWG#9321-F-3008
(EWT5) TERM BOX FOR STATIC INV#21 SEE DWG#9321-F-3008
Ø 118V INSTR.BUS 22 (PE9)
Ø 118V INSTR.BUS 21 (PE8)
RCS-OPS ANALOG CAB. CH.2 (RACK H2)
RCS-OPS ANALOG CAB. CH.1 (RACK H1) 206807 & 208356
SPARE
SPARE
FZ 1249A (POST ACCIDENT CONT. VENT SYSTEM)
CCR PNL."SA" LQ-3100, 207564
POS.IND.FOR HCV 638&640 (CCR PNL "SG")
CCR PNL."SC" LR-437 - LR-447 208490
REACTOR PROTECTION CAB CH.4 RACK E3 & F3
TURB.TERM BOX"B"(9321-F-3209)
LEADING EDGE FLOW METER
CONTAINMENT PRESSURIZATION FLOW XMTR. & SOL'S ZONE 4, 208793
HEATER DRAIN BYPASS VALVE CONTROL SOLENOIDS 9321-LL-3130,SHT #14
TO SQUARE ROOT EXTRACTORS & RCS LEG FLOW LOOP 6008 (LOCATED ON PNL.) SEE IP2-S-000097
EXTRACTION STEAM REVERSE CURRENT VALVE CONTROL SOLENOIDS 9321-LL-3130,SHT #8
AUX. FEED WATER VALVES FCV-406A & FCV-406C CST XMTR. LT-128 (CCR PNL."SC")
NUCLEAR INSTR. SYS. RACK C8 (CONT. PWR.) 9321-F-3316
NUCLEAR INSTR. SYSTEM RACK C8 (INSTR. PWR.) 9321-F-3316
SIS INSTRUMENT ANALOG RACK F1
TO RCP VIBRATION MONITORING PANEL RACK C-9 DWG. 205817
RCP VIBRATION MONITORING PANEL 205817
REACTOR PROTECTION ANALOG CH.4 (RACK B9 & B10)
CCR PNL."SC" LR417 - LR427 A208490
FEEDWATER CONTROL RACK B4 POWER SUPPLY LOOP 7610 306114
FEEDWATER CONTROL RACK B5
REACTOR TEMP/PRESS/STEAM (RACKS B6, B7, B8 & D10)
NUCLEAR INSTR. SYS. RACK C7 (INSTR. PWR.) 1989M02593
NUCLEAR INSTR. SYS. RACK C7 (CONT. PWR.) 1989M02593
TIC-623.TIC-624 & TIC-651
HEATERS 26A 26B & 26C
EXTRACTION STEAM REVERSE CURRENT VALVE CONTROL SOLENOIDS 9321-LL-3130,SHT #8
AUX. FEED WATER VALVES FCV-406A,FCV-406B & FCV-406C (CCR PNL."SC")
HEATERS 24C
FLASH EVAPORATOR (RETIRED)
HEATERS 23B
HEATERS 24A
MAIN TRANSF. #21 & 22 TEMP INDIC (LOC.ON FLIGHT PNL."FAF") (VARIOUS CONTROLS & INDIC'S 9321-LL-3130,SHEET #16 & 226273.
HEATERS 21A & 22A
HEATER DRAIN BYPASS & DUMP VALVE CONTROL SOLENOIDS 9321-LL-3130,SHT #10
HEATERS 21B & 22B
HEATERS 21C & 22C
CONTAINMENT PRESSURIZATION FLOW XMTR. & SOL'S ZONE 3, 208793
RCS DRAIN DOWN LEVEL INDICATOR LI-7610, PANEL "SG" 306114
WASTE DISPOSAL PANEL
MISC. RELAY RACK G3R & CCP AUTOSTART CCR PNL."FC".. IP2-S-000189 & 226273.
SI LOGIC TEST SWITCHES RACKS (E7-E8 & F7-F8)
REACTOR PROTECTION CAB CH.3 RACK E4 & F4
TURB. STOP VALVE'S INDIC. (TRIP ESS. CIRCUIT) 9321-LL-3130 SH 13 & 9321-F-3200
345KV PRIMARY PILOT WIRE RELAY (FLIGHT PANEL "FBR") 9321-LL-3132,SHT #6
138KV BACKUP PILOT WIRE RELAY (FLIGHT PANEL "FCR") 9321-LL-3132,SHT #9
345KV BACKUP PILOT WIRE RELAY (FLIGHT PANEL FBR) 9321-LL-3132,SHT #7
I38KV PRIMARY PILOT WIRE RELAY (FLIGHT PANEL FCR) 9321-LL-3132,SHT #8
SPARE
TURBINE REDUNDANT OVERSPEED PROTECTION TRAIN "B" 9321-3223
MISC. RELAY RACK G4F
AUX.FEED WATER VALVE FCV-406B VALVE MOV-345A INDICATION (CCR PNL."SC")
F.W. BYPASS VLVS POSITION TRANSMITTERS 9321-LL-3601 SH.4A
REACTOR COOLING PUMPS BEARING TEMP. SCANNER PROGRAMMER. 205815
DET. DRIVE RACKS D4,D5 D6 & D7 (MOVEABLE INCORE FEED)
INSTR. AIR EMERG. MAKE-UP CONT.SOV'S (CCR PNL."SJ" & "SN") INSTR.AIR DRYER 22. 9321-LL-3131 SH. 2B. 3A & 5
S.I.S. HI HEAD PUMP & RESIDUAL HEAT REMOVAL PUMP FIC-634. FIC-645 & FIC-646 LO FLOW ALARM
AR-1102 DEW POINT RECORDER (CCR PNL"S" & "SN") FIC-633. TT-1102 & TT-1203
REACTOR PROTECTION LOGIC STATUS LIGHTS (CCR PNL'S "SB2","SG" & "FBR") RACKS F3, F4, F5, F6 & G4
PIGS MUX "G" - BRG. TEMP. (CCR PNL."SK") & PR-1196 CONT. BLDG. PRESSURE & FI-1196 (CCR PNL."SL") & HC-943 (CCR PNL."SM")
REACTOR PROTECTION CAB.CH.2 RACK E5 & F5
CONTAINMENT PRESS. FLOW XMTR. & SOL'S. ZONE 2, 208792
SUMP LEVEL INDIC. & CONTAINMENT AIR MONITORING LIGHTS 225272 & 226248 (CCR PANEL SB1)
SPARE
STEAM GEN.ANALOG PROT.CH.2 RACKS A10 & A11
TIC-627 (PRIMARY AUX. BLDG.)
NUCLEAR INSTR. SYS. RACK C6 (CONT. PWR.) 9321-F-3314
NUCLEAR INSTR. SYS. RACK C6 (INSTR. PWR.) 9321-F-3314
SIS INSTRUMENTATION ANALOG RACK E1
RCS/ACS ANALOG RACKS A7 & A8
REACTOR ANALOG PROTECTION CH.2 RACK A9 225351
MAIN TURBINE RUNBACK PERMISSIVE BISTABLE PC-4128-1 (CCR PNL."FAFE") 9321-LL-3130 SH.3
RCS DRAIN DOWN LEVEL INDICATION LOOP L-7611, PANEL "FA" 306113
TIC-100.TIC-149.TIC-103.TIC-107.
CHEMICAL & VOLUME CONTROL SYSTEM RACKS A5.
CHEMICAL & CONDENSATE STORAGE TANK RACKS A6 & A12
NUCLEAR INSTR. SYS. RACK C5 (INSTR. PWR.) 9321-F-3313
NUCLEAR INSTR. SYS. RACK C5 (CONT. PWR.) 9321-F-3313
RADIATION MONITOR RACK D1
STEAM GEN.ANALOG PROT.CH.1 RACKS A2 & A3
AUX. FEEDWATER HFC-405C (CCR PNL."SC") 208490
CONTAINMENT PRESSURIZATION FLOW XMTR'S & SOL'S ZONE #1, 206793
REACTOR PROTECTION CAB. CH.#1 RACKS E6 & F6
CONTAINMENT L941 & RECIRC. L938 SUMP LEVEL INDIC. LIGHTS TRANSF. & SAFETY INJECTION "DEFEAT" INDIC. LIGHTS. 225272 & 210214 (WHSE. 610F089 SH.41)
PWR. SUPPLY PT-1180PS THRU PT-1184PS
CCR PNL."SF" HC-104, HC-105, HC-123, HC-130 & HC-142, VC SUMP FLOW INDIC. & CCR PNL."SG" HC-133 & TR-636
SPEED INDIC. FOR STEAM DRIVEN AUX. BFP CONT. STA. "B" (BFPs CW MAKE-UP SUCT. VLVS) ALT. (PWR. 9321-LL-3131, SH9) & REACTOR PROT. CAB. RACK E2 & F2. 9321-F-3283
CONTAINMENT BLDG. PURGE VALVES (CCR PNL."SL") 9321-LL-3131 SH.2
INSTR. AIR DRYER #21,9321-3131,SH.4
CONTAINMENT BLDG. PRESS. RELIEF VAL'S & DUCT CONT. SOLENOID VAL'S (CCR PNL."SL" & "SN") 9321-LL-3131 SH.3
HEATER DRAIN TANK LEVEL CONT. PNL. IP2-S-000189 & 226273.
CONDENSATE PUMPS #21, 22 & 23 AUTO START CIRCUIT 9321-LL-3113 SH.8A (CCR PNL "SC")
TURBINE REDUNDANT OVERSPEED PROTECTION TRAIN "A" 9321-3223
VALVE MOV-745B INDICATION
SPARE
CCR PNL."FDR" TR-407,-411B & -1106
CCR PNL."FDF" NR-041,-042,-043 & -044
CCR PNL."FDF" I-NR-45,FCF ANNUNC.
9321-F-3272,-3274 & -3275
CCR PNL."SD" ; RECORDERS (PR-1134, PR-1151 & TR-1101)
ALSO CONDENSER HP INDIC. LTS. 207321
FOR ADDITIONAL LOAD INFO REGARDING THESE INSTR. BUSSES SEE THE FOLLOWING DWGS:
INSTR BUS #21-- 263980
INSTR.BUS #22-- 263981
INSTR BUS #23-- 263982
INSTR.BUS #24-- 263983
SYMBOLS
S---SAFETY INJECTION SIGNAL
T----TRIP OR CLOSE ON HIGH CONTAINMENT PRESSURE
SIS--SAFETY INJECTION SYSTEM
ACS--AUXILIARY COOLANT SYSTEM
RCS--REACTOR COOLANT SYSTEM
17---CONTROL ROOM PANEL
NOTES:
1. FOR INSTRUMENT BUSES 21,22,23 & 24 ALL 15A MOLDED CASE CIRCUIT BREAKER CUTLER-HAMMER TYPE GHB
REFERENCE DWG.
ONE LINE DIAGRAM 480VAC MCC 21, 22, 23, 25 & 25A---DWG.#9321-F-3004
ONE LINE DIAGRAM 480VAC MCC 27 & 27A---DWG.#9321-F-3005
ONE LINE DIAGRAM 480VAC MCC 26A & 26B---DWG.#9321-F-3006
W/D 118VAC INSTRUMENT BUS PANELS 21 & 22---DWG.#9321-F-3199
W/D 118VAC INSTRUMENT BUS PANELS 23 & 24---DWG.#9321-F-3200
GENERAL ARRANGEMENT OF BKR PANEL BOARD 21,22, 23 & 24----DWG.# 2004MD1129
**---MAIN BKR IS CUTLER-HAMMER TYPE GHB 100A-1 POLE
PANELS ARE SUPPLIED BY NLI.
FOR OTHER SYMBOLS SEE CON ED DWG 225113
SHIELDED SQUARE D ISOLATION TRANSFORMER 120-120V 1Ø 1KVA
LOCATION
PNL.DESIGNATION
SOLATRON-LINE VOLTAGE REGULATOR 120-120V,1Ø,1KVA
LOCATION
PNL.DESIGNATION
FOR OTHER CONNS.& EQUIPT. ON THIS PNL.SEE DWG#. 9321-F-3006
FOR SCHEM.INFO.OF 118VAC INST.BUSES#21A,22A,23A & 24A SEE DWG#A208503
COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED
65 INCORPORATED EC-55907 04/01/16 SJB
REV DESCRIPTION DATE BY CHK'D APP'D
REVISIONS
TITLE:SINGLE LINE DIAGRAM
118 VAC. 1 PHASE INST. BUSSES
NO. 21,22,23 AND 24
- UFSAR FIGURE No. 8.2-13
DRAWN BY I. WATKINS SCALE NONE REC'D
Entergy Nuclear Northeast
STATION INDIAN POINT #2
DWG. NO. A208502-65 DZ









FOR ADDITIONAL LOAD INFO REGARDING THESE INSTR. BUSSES SEE THE FOLLOWING DWGS:

INSTR BUS #21A-- 263984
INSTR.BUS #22A-- 263985
INSTR BUS #23A-- 263986
INSTR.BUS #24A-- 263987

(*) CONTINUED FROM CIRCUIT #9 ABOVE
JD6-JA4/02 TO T-SAT (CH.B) NR46, NR47, PR403, TR433 PANEL FDF, DWG. 9321-F-3274

REFERENCE DWGS.:

SINGLE LINE DIAG. D-C SYSTEM _ _ _ _ _ _ _ _ _ _ _ _9321-F-3008
D/C FOR INSTR. BUSES 21A, 22A, 23A& 24A _ _ _ _ _ _ _ _208504

NOTES:

1- FOR SCHEM. INFO. OF 118V AC INSTR. BUSES# 21,22,23&24 SEE DWG. #208502

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE DWG'D	APP.
37	INCORPORATED EC45124	03/14/15	MP		

REVISIONS

TITLE: SCHEM DIA OF 118 VAC INST BUSES 21A,22A,23A AND 24A (LOCATED IN CCR)
- UFSAR FIGURE No. 8.2-14

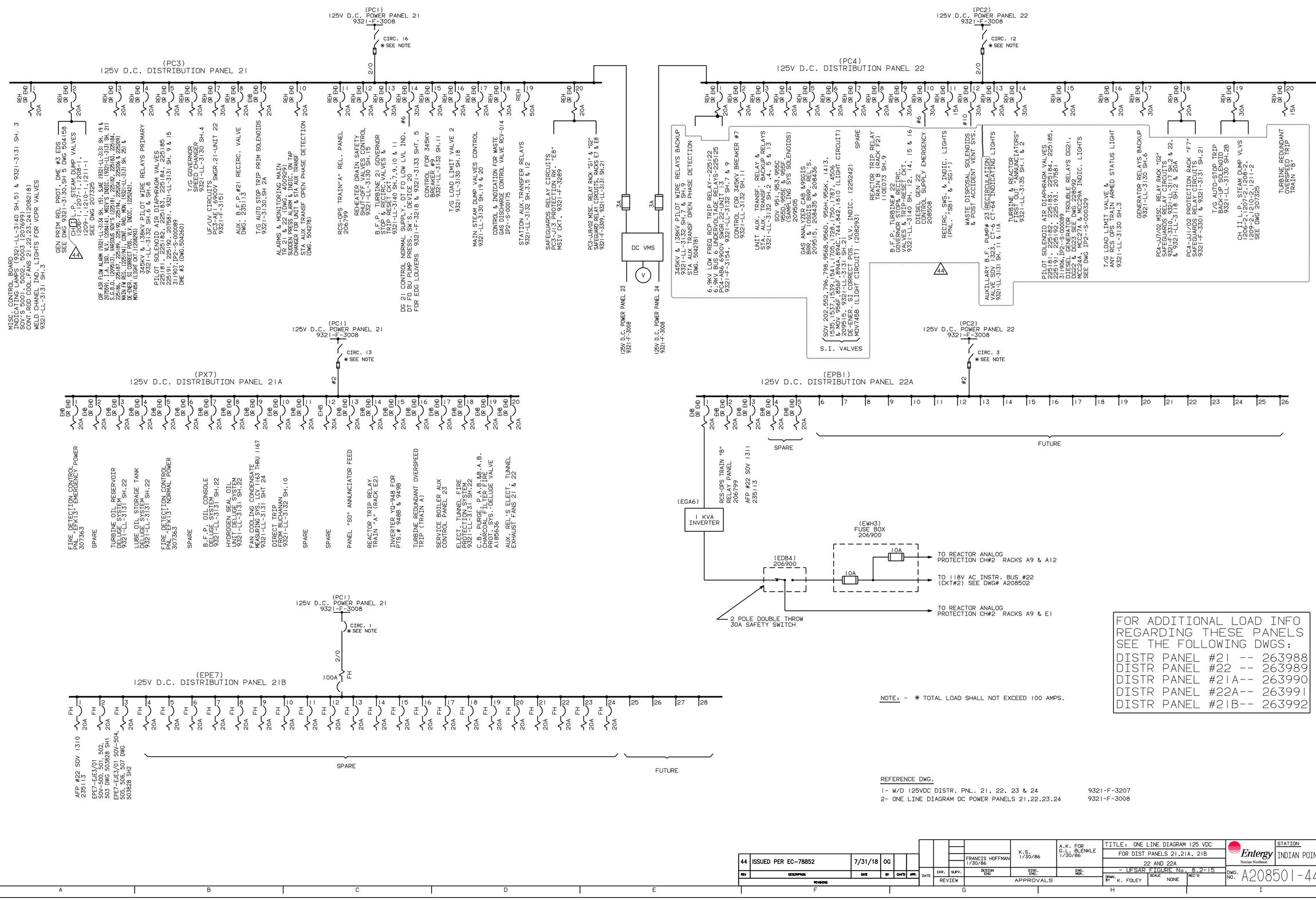
MOD.,PROC.,OR SPEC.

DRWN. I. WATKINS | SCALE NONE | REC'D

Entergy Nuclear Northeast

STATION: INDIAN POINT #2

DWG. NO.: A208503-37 DZ



FOR ADDITIONAL LOAD INFO REGARDING THESE PANELS SEE THE FOLLOWING DWGS:

DISTR PANEL #21 -- 263988
DISTR PANEL #22 -- 263989
DISTR PANEL #21A-- 263990
DISTR PANEL #22A-- 263991
DISTR PANEL #21B-- 263992

NOTE: - ✱ TOTAL LOAD SHALL NOT EXCEED 100 AMPS.

REFERENCE DWG.

1- W/D 125VDC DISTR. PNL. 21, 22, 23 & 24 9321-F-3207
2- ONE LINE DIAGRAM DC POWER PANELS 21,22,23,24 9321-F-3008

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
44	ISSUED PER EC-78852	7/31/18	OG		

REVISIONS

	CHK.	SUPV.	DESIGN ENG.	DISC. ENG.	ENG. MGR.
DATE	REVIEW		FRANCIS HOFFMAN 1/30/86	K.S. 1/30/86	A.K. FOR G.L. BLENKLE 1/30/86
	APPROVALS				

TITLE: ONE LINE DIAGRAM 125 VDC
FOR DIST PANELS 21,21A, 21B
22 AND 22A
- UFSAR FIGURE No. 8.2-15
DRWN. BY K. FOLEY | SCALE NONE | REC'D

Entergy Nuclear Northeast

STATION: INDIAN POINT #2

DWG. NO. A208501-44 | 02

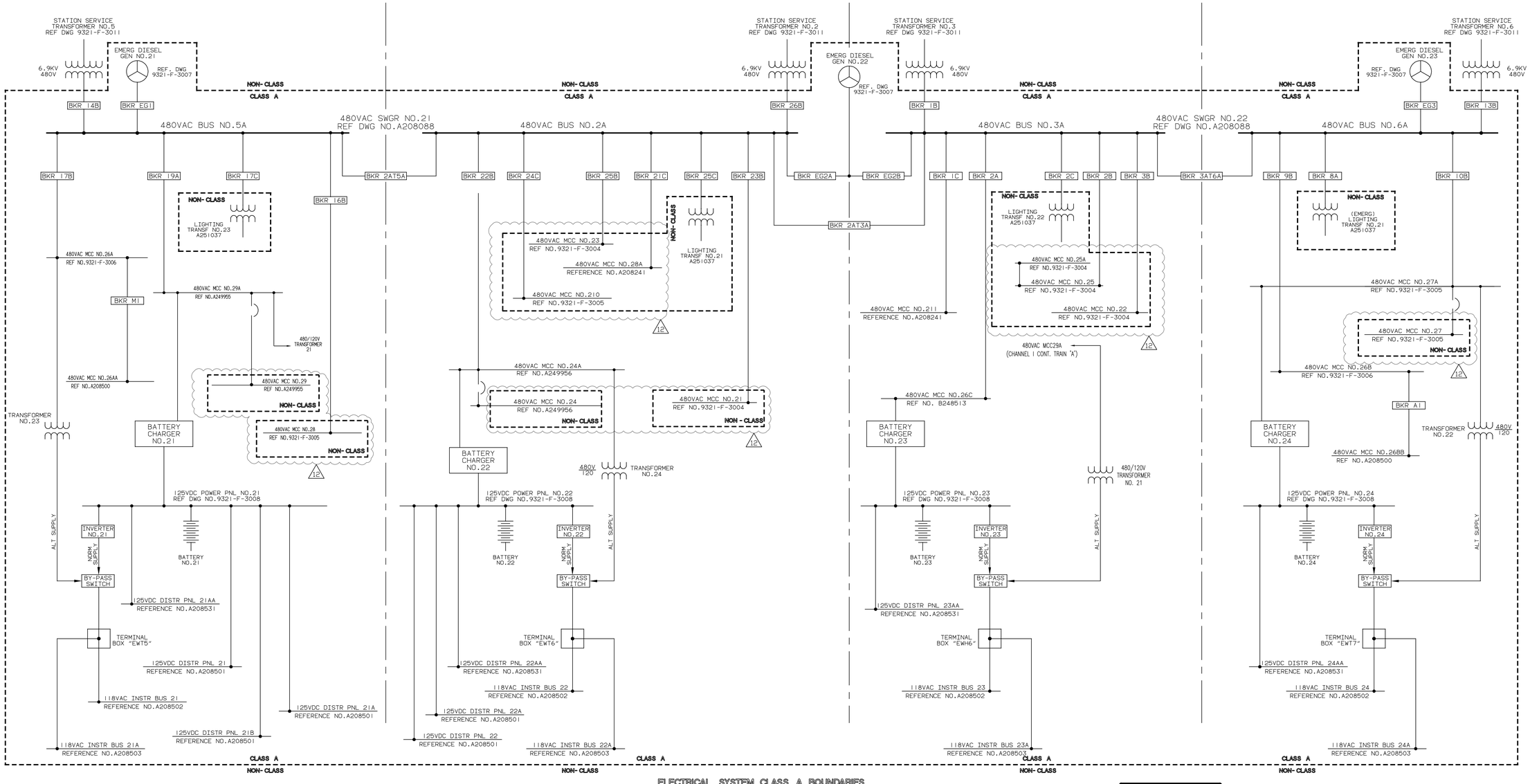

(PC2)
125V DC POWER PANEL 22
(SEE DWG. 9321-F-3204)
SEE LEGEND
(EDK12)
(EDK13)
200A
SUPPLY TO 125V D C DIST.PNL 22 A208501
SUPPLY TO 125V D C DIST.PNL 22A A208501
10KVA STATIC INVERTER "PA" (EGP10)
MANUAL BYPASS SWITCH (EE10)
BY-PASS
10KVA 1Ø (EBD2)
P.A. SYSTEM 9321-F-3250
MCC24 A249956
BOLTED & BY-PASS SOLATRON TR#24 (EBA6)
480VAC MCC 24A A249956
TRANSFORMER NO.24 480/120V 15KVA SINGLE Ø (EBA5)
10KVA STATIC INVERTER 22 (EGA2)
MANUAL BY-PASS SW 22 (EDB6)
118 VAC INST. BUS 22 A208502
118 VAC INST. BUS 22A A208503
(EWT6)
REACTOR TRIP SWGR & M-G SET SWGR. "RTB" "BYA" 110E073 SHEET #11
EXCITER CUBICLE SHORTING & BKR CONTROL, FIELD FLASHING & RECTIFIER TEMP MONITORING IP2--S-000056, 1986M03496
6900V SWGR 22 CONTROL, UF/UV 9321-LL-3114, 225123 225124, 225173
REGULATOR CUBICLE INVERTER 1 IP2--S-000057
480V SWGR 22 BUS 6A (EMERG. SUPPLY) A208088
DIESEL GEN 23 (EMERG. SUPPLY) A208509 IP2--S-000286
480V SWGR 21 BUS 2A (NORMAL SUPPLY) A208088
SPARE
SPACE
CONTROL POWER FOR BREAKERS 52/MLT22 52/MLT22-23, 52/MLT23 DWG 195B46, 195B47
125VDC DIST. PANEL 22AA A208533
EMERG LTG NO. 218 (PG9) 9321-F-3035
EMERG LTG NO. 213 (PG5) 9321-F-3035
60A
40A
TRANSFER SWITCH (DA5)
120/208V LTG BUS 23 9321-F-3035
BUS TIE(NORMALLY OPEN)
MA NON-AUTO LOCKED OPEN 800A
700A
(WV8) FUSE BOX 1600A
BATTERY CHARGER 22 250 AMP. (MN3)
480VAC MCC 24A A249956
(EGB5) (EGB6) BATTERY 22 58 CELLS *1584 AH
(PC1)
125V DC POWER PANEL 21
(SEE DWG. 9321-F-3204)
(EDK10)
SUPPLY TO 125V DC DIST PNL 21 A208501
10KVA STATIC INVERTER 21 (EGA1)
(FDR) DC VMS
VOLTMETER SWITCH (DC-VMS-FDR)
(DC-VM-FDR)
3A
BOLTED & BY-PASS SOLATRON TR#23 (EBA4)
480VAC MCC 26A 9321-F-3006
TRANSFORMER NO.23 480/120V 15KVA SINGLE Ø (EBA1)
MANUAL BY-PASS SW 21 (EDB5)
118 VAC INST. BUS 21 A208502
118 VAC INST. BUS 21A A208503
(EWT5)
EMERG. LTG. DIESEL GEN. BLDG. A209211
TRANSFER SWITCH 25 (DA9)
FROM MCC26B VIA TRANSF. 26 A209211
(EDK11)
SUPPLY TO 125V DC DIST PNL 21A A208501
6900 V SWGR. TEST BOX 9321-F-3134
TRANSFER SWITCH 23 (DA6)
120/208V LTG BUS 22 9321-F-3035
EMERGENCY LTG PNL #29 CONTROL ROOM (EPB3)
9321-F-3035
PRESSURIZER HTR GRD. DETECTOR PNL. 9321-F-3172
H2 & STATOR CLG WTR CAB CONTROL ALARM 859E393 SH.2
480V SWGR 22 BUS 3A (EMERG. SUPPLY) A208088
480V SWGR 21 BUS 5A (NORMAL SUPPLY) A208088
REACTOR TRIP SWGR "RTA" & "BYB" 110E073 SH#11 GEN OUTPUT BKRS #235037
125V.D.C. DIST. PANEL 21AA A208533
6900V. SWGR21 CONTROL, UF/UV 9321-LL-3113, 225121 225122, 225173
125V.D.C. DIST. PANEL 21B A208501
EMERG LTG CONVENTIONAL AREA 9321-F-3041
TRANSFER SWITCH 21 (DA2)
120/208V LTG. BUS 21 9321-F-3041
(WV7) FUSE BOX 1200A
BATTERY CHARGER 21 250 AMP. (EMG4)
480VAC MCC 29A A249955
(EGC3) (EGC4) (EGC5) BATTERY 21 58 CELLS *1500 AH
125V DC POWER PANEL 23
(SEE DWG. A206976)
10KVA STATIC INVERTER 23 (EGA8)
92
125 VDC DIST PANEL 23AA A208533
SUPPLY FOR A.T.W.S. MITIGATION CONTROL PANEL D9 (A.M.S.A.C #1) A242373
DIESEL GEN 22 (NORMAL SUPPLY) A208508 IP2--S-000285
480V SWGR 21 BUS 5A (EMERGENCY SUPPLY) A208088
480V SWGR 22 BUS 3A (NORMAL SUPPLY) A208088
DIESEL GEN 21 (EMERG SUPPLY) 9321-F-3218 IP2--S-000284
CONTROL OIL LOW PRESS TRIP REC'S 63X1/AST4 63X2/AST4 CIRCUIT. 9321-LL-3130 SH. 2B
EHB OR EHD
(EDB8) CKT BKR 800A
BATTERY CHARGER 23 250 AMP. (EGA7)
(EGA9) BATTERY 23 58 CELLS *495 AH
480VAC MCC 26C B248513
(EBB12) TRANSFORMER NO.21 480/120V 15KVA SINGLE Ø
480VAC MCC 29A A249955
MANUAL BY-PASS SWITCH 23 (EDC1)
118 VAC INST. BUS 23 A208502 (EWH6)
118 VAC INST. BUS 23A A208503
(EPA9)
125V DC POWER PANEL 24
(SEE DWG. A206900)
(EDB2) CKT BKR 800A
BATTERY CHARGER 24 250 AMP. (EGA3)
480VAC MCC 27A 9321-F-3005
(EGA5) BATTERY 24 58 CELLS *495 AH
10KVA STATIC INVERTER 24 (EGA4)
REGULATOR CUBICLE DC POWER SUPPLY IP2 S-000057
DIESEL GEN 23 (NORMAL SUPPLY) A208509 IP2--S-000286
480V SWGR 21 BUS 2A (EMERGENCY SUPPLY) A208088
480V SWGR 22 BUS 6A (NORMAL SUPPLY) A208088
EP56 FUSE BOX 30A
SUPPLY FOR ALARM ANNUN. SA,SA-1,SB-1,SB-2,SC,SD,SE,SF DWG 207322
FIRE PROTECTION B208476 & B208475
SUPPLY FOR ALARM ANNUN. SG,SH,SJ,SK,SL,SM, STEAM WATER ANALYSIS PNL VIA TERMINAL BOX "EWH8" DWG. 9321-3207
ALARM ANNUN. PNL FBF B228091
SUPPLY FOR A.T.W.S. MITIGATION CONTROL PANEL D9 (A.M.S.A.C #2) A242373
125VDC DIST. PANEL 24AA A208533
BOLTED & BY-PASS SOLATRON TR#22 (BF2)
480VAC MCC 27A 9321-F-3005
(BC2) TRANSFORMER NO.22 480/120V 15KVA SINGLE Ø
MANUAL BY-PASS SW 24 (EDB1)
118 VAC INST. BUS 24 A208502 (EWT7)
118 VAC INST. BUS 24A A208503
FOR ADDITIONAL LOAD INFO REGARDING THESE PANELS SEE THE FOLLOWING DWGS:
POWER PANEL #21-- 263935
POWER PANEL #22-- 263936
POWER PANEL #23-- 263937
POWER PANEL #24-- 263938
LEGEND:
MAL SQUARE "D"CO. MOLDED CASE CIRC.BKR.250VDC,100A TRIP THERMAL MAGNETIC, CAT#MAL 261000 IN NEMA I ENCLOSURE.
HFA WESTINGHOUSE "AB" DE-ION 2-POLE,250V DC CIRC. BKR. INITIALS DESIGNATE FRAME TYPE
100 THERMAL-MAGNETIC ELEMENT NUMERALS DESIGNATE CONTINOUS RATING
2 125V DC STARTER & SIZE
A MOLDED CASE SWITCH W CAT #RHFA-2100N (THIS SWITCH IS NOT TO BE USED TO OPEN ENERGIZED CIRCUIT)
B MOLDED CASE SWITCH G.E. CAT#TED136YT150
RHFA 3-POLE 250VDC CIRCUIT BREAKER CTR POLE NOT CONNECTED INITIALS DESIGNATE FRAME TYPE
NOTES:
1-125V D.C. POWER PNLS 21 & 22 ARE WESTINGHOUSE TYPE CDP.
2-125V D.C. DIST PNL'S 21 & 22, 125V DC POWER PNL'S 23 & 24 ARE WESTINGHOUSE TYPE NHEB.
REFERENCE DWG.
9321-F-3004 ONE LINE DIAGRAM 480V MCC'S 21, 22, 23, 25 & 25A
9321-F-3005 ONE LINE DIAGRAM 480V MCC'S 27 & 27A
9321-F-3006 ONE LINE DIAGRAM 480V MCC'S 26A & 26B
A208500 ONE LINE DIAGRAM 480V MCC'S 26AA & 26BB
A208507 ONE LINE DIAGRAM 480V MCC'S 28, 210
A208241 ONE LINE DIAGRAM 480V MCC'S 28A & 211
A249955 ONE LINE DIAGRAM 480V MCC'S 29 & 29A
A249956 ONE LINE DIAGRAM 480V MCC'S 24 & 24A
1980M307 SCHEMATIC OF 10KVA INVERTER FOR BUS #23 & 24
1980M296 SCHEMATIC OF 10KVA INVERTERS
9321-3204 WIRING DIAG 125VDC POWER PNLS 21 & 22, STATIC INVERTERS 21 & 22
A206976 WIRING DIAG 125VDC POWER PNL 23, STATIC INVERTER 23
A206900 WIRING DIAG 125VDC POWER PNL 24, STATIC INVERTER 24
9321-3250 WIRING DIAG P.A. SYSTEM AND 10 KVA INVERTER
NOTE:
FOR OTHER CONN'S ASSOC WITH THIS DWG. SEE: 125VDC DIST PNL'S 21,22,21A,21B & 22A A208501.
125VDC DIST PNL'S 21AA,22AA,23AA & 24AA A208533.
* STATED CAPACITY IS THE NOMINAL FOR 8 HOUR DISCHARGE TO 1.75 V PER CELL FINAL
COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED
92 INCORPORATED EC-31437 08/25/11 DM APPROVAL SIGNATURES ON FILE
REV DESCRIPTION DATE BY CHK'D APP.
REVISIONS
REPROD REPROD REPROD
MR
DATE CKR. SUPV. DESIGN ENG DISC. ENG. ENG. MGR.
REVIEW APPROVALS
TITLE:SINGLE LINE DIAGRAM
D.C. POWER PANELS 21,22, 23 AND 24.
- UFSAR FIGURE No. 8.2-16
DRWN. BY I. WATKINS SCALE NONE REC'D
Entergy Nuclear Northeast
STATION INDIAN POINT #2
DWG. NO. 9321-F-3008-92 DZ

CHANNEL I (CONTROL TRAIN "A")

CHANNEL II (CONTROL TRAIN "B")

CHANNEL III (CONTROL TRAIN "A")

CHANNEL IV (CONTROL TRAIN "B")



ELECTRICAL SYSTEM CLASS A BOUNDARIES

NOTE

THIS DWG IS INTENDED TO SHOW "SAFEGUARD CHANNELING AND CONTROL TRAIN DEVELOPMENT" ONLY. FOR MORE INFORMATION CONCERNING SPECIFIC BKR POSITION,SIZING AND EQUIPMENT RATING SEE REFERENCE DWG AS INDICATED.

THIS DRAWING CONTAINS ITEMS WHICH MUST BE CONTROLLED WITHIN CON EDISON AS:

CLASS A ITEMS

PER CI - 240-1

COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
12	INCORPORATED EC-18329	01/09/18	SM	APPROVAL SIGNATURES ON FILE	

REVISIONS

REVISION	DESCRIPTION	DATE
J.H. 05/22/01 DES	THIS REVISION IS NON-CLASS PER THE QAPD REVISED DRAWING PER CRS #20010488 9 P/N 69901-AF J.H./L.L. 05/18/01	
M.E. 05/22/01 ENG	STRATUS ENGINEERING	

DATE		J. LOWNEY 10/01/80	P.DUGGAN 10/07/80	ROBERT SAYA 10/07/80
	CKR.			
	SUPV.			
	DESIGN ENG		DISC. ENG.	ENG. MGR.
REVIEW	APPROVALS			

TITLE: SINGLE LINE DIAG OF UNIT SAFEGUARD CHANNELING AND CONTROL TRAIN DEVELOPMENT. - UFSAR FIGURE No. 8.2-17

DRAWN BY: I. WATKINS | SCALE: NONE | REC'D: 11/24/80

Entergy Nuclear Northeast

STATION: INDIAN POINT

DWG. NO.: A208376-12 DD

INDIAN POINT — CABLE TRAY SEPARATION FUNCTIONS & ROUTING — A 208761

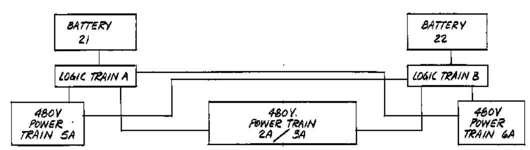
CHANNEL / CONTROL TRAIN / POWER TRAIN SEPARATION DESIGNATIONS	FUNCTION	PHYSICAL ROUTING DESIGNATIONS (SEE NOTE 5)
I (RED) II (WHITE) III (BLUE) IV (YELLOW)	120 VOLT A.C. INSTRUMENT BUS FEEDS AND ANALOG & DIGITAL SIGNAL OUTPUTS ASSOCIATED WITH 120 VOLT A.C. INSTRUMENT BUSES 21, 22, 23 & 24 RESPECTIVELY	J1, J2, J3, J4 — FOR PROTECTION SYSTEM CIRCUITRY CHANNEL / ROUTING ASSOCIATIONS ARE FIXED (I IN J1, II IN J2, ETC.) SPECIFIC EXCEPTIONS (e.g. A CHANNEL I CIRCUIT ROUTED IN A J2, J3 OR J4 TRAY) MUST BE APPROVED BY E.E. AND WILL ONLY BE PERMITTED FOR NON-SAFETY (NON-1E) FUNCTIONS ALL PORTIONS OF A PARTICULAR INSTRUMENT LOOP SHALL BE ROUTED IN THE SAME CHANNEL.
CONTROL TRAIN A (RED) CONTROL TRAIN B (WHITE)	125 VOLT D.C. CONTROL AND SMALL POWER FEEDS ASSOCIATED WITH 125 VOLT D.C. BATTERIES 21 AND 22 RESPECTIVELY * * IN THE ORIGINAL PLANT DESIGN ONLY TWO BATTERIES (BATTERIES 21 & 22) EXISTED AND REDUNDANT (TRAIN A AND TRAIN B) CONTROL SIGNALS ARE SENT TO EQUIPMENT IN EACH POWER TRAIN. THIS PERMITS THE 3RD POWER TRAIN ASSOCIATED WITH 480 VOLT BUSES 2A AND 3A TO MEET SINGLE FAILURE CRITERIA	K1 Δ K2 Δ Δ A THIRD D ROUTING EXISTS FOR SELECTED CIRCUITS REQUIRING 3 TRAIN SEPARATION
480 VOLT M.C.C. POWER TRAIN 5A AND ASSOCIATED 120 VOLT A.C. (M.C.C. CONTROL TRANSFORMER) SMALL POWER & CONTROL CIRCUITS (RED)	480 V. M.C.C. POWER & CONTROL	K1 SEE NOTES #1 & 4 — FIXED ASSOCIATION (i.e. 5A IN K1) FOR ALL 1E CIRCUITS. SPECIFIC EXCEPTIONS (e.g. A NON 1E M.C.C. POWER OR CONTROL FEED FROM BUS 5A ROUTED IN K2 MUST BE APPROVED BY E.E.
480 VOLT M.C.C. POWER TRAIN 6A (YELLOW)	" " " " "	K2 SEE NOTES #1 & 4
480 VOLT M.C.C. POWER TRAIN 2A (WHITE)	" " " " "	VARIOUS "D" CHANNELS SEE NOTES #1 & 4
480 VOLT M.C.C. POWER TRAIN 3A (BLUE)	" " " " "	VARIOUS "D" CHANNELS SEE NOTES #1 & 4
CONTROL TRAIN C (BLUE)	125 VOLT D.C. CONTROL AND SMALL POWER FEEDS ASSOCIATED WITH 125 VOLT D.C. BATTERY 23 (ADDED AFTER PLANT START-UP)	K3D AND VARIOUS "D" CHANNELS SEE NOTES #1 & 4
CONTROL TRAIN D (YELLOW)	125 VOLT D.C. CONTROL AND SMALL POWER FEEDS ASSOCIATED WITH 125 VOLT D.C. BATTERY 24 (ADDED AFTER PLANT START-UP)	SEE NOTES #1 & 4
HEAVY POWER (480 VOLT & 125 VOLT D.C.) BUS 5A (RED) BUS 6A (YELLOW) BUS 2A (WHITE) BUS 3A (BLUE)	480 VOLT HEAVY POWER & 125 VOLT HEAVY POWER ASSOCIATED WITH 480V BUS 5A/BATTERY 21, 480 VOLT BUSES 2A & 3A/BATTERY 22 AND 480 VOLT BUS 6A RESPECTIVELY	C4 (ASSOCIATED WITH BUS 5A) C3 (ASSOCIATED WITH BUS 6A) C6 (ASSOCIATED WITH BUS 2A) C5 (ASSOCIATED WITH BUS 3A) SEE NOTE #4
D.C. CONTROL FEEDS FOR DIESELS	SPECIAL ROUTINGS ASSOCIATED WITH D.C. CONTROL FEEDS FOR DIESELS 21, 22 & 23 RESPECTIVELY THROUGH THE CONTROL TUNNEL	F(21) DC FEED FROM BATTERY 21 F(22) " " " " 22 F(23) " " " " 23 F(24) " " " " 24

NOTES:

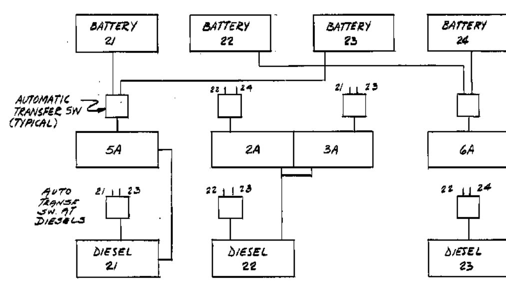
1. K1 AND K2 ARE THE KEY BASIC 480 VOLT SMALL POWER AND 120 VOLT M.C.C. ROUTING DESIGNATIONS. THESE DESIGNATIONS HAVE BEEN FURTHER EXPANDED IN THE RACEWAY SYSTEM TO PROVIDE ADDITIONAL ROUTING OF FUNCTIONAL INFORMATION

ROUTINGS ADAPTABLE WITH K1 480/120 VAC EXCEPT AS NOTED	ROUTING ASSOCIATED WITH K2D BATTERY 22	ROUTING ASSOCIATED WITH K3D BATTERY 23	ROUTINGS ADAPTABLE WITH K2	ROUTING OR FUNCTIONS
K1 (RED)	—	— ▲	K2 (YELLOW)	GENERAL DESIGNATIONS USED IN ~~MOST AREAS OF THE PLANT AND~~ FOR MOST FUNCTIONS ▲ D-D400 - EXISTS FOR THIRD TRAIN SEPARATION IN ORIGINAL PLANT DESIGN
K1A (RED)	—	— *	K2A (YELLOW)	ROUTING BETWEEN DIESEL AND CONTROL BUILDING * D-D200 - EXISTS FOR THREE TRAIN SEPARATION IN ORIGINAL PLANT DESIGN
K1B (RED)	—	—	K2B (YELLOW)	ROUTING BETWEEN P.A.B. & CONTAINMENT FOR MCC 26A & M.C.C. 26B
K1AA (RED)	—	—	K2BB (YELLOW)	POWER AND CONTROL ASSOCIATED WITH MOTOR CONTROL CENTERS 26AA AND 26BB RESPECTIVELY WHICH WERE ADDED AS PART OF "THREE MILE ISLAND" PLANT MODIFICATIONS
125 V DC K1 LOGIC & CONTROL POWER K1D (RED)	125 V DC K2 LOGIC & CONTROL POWER K2D (WHITE)	125 V DC. K1 LOGIC ONLY K3D (BLUE)	125 V DC K2 LOGIC ONLY K4D (YELLOW)	BATTERY 21 & 22 LOGIC SIGNALS AND CONTROL POWER (K1 & K2) RESPECTIVELY AND NEW ROUTINGS FOR 125 VOLT D.C. BATTERIES 21 THROUGH 24 RESPECTIVELY FOR CIRCUITS WHICH WERE ADDED AS PART OF "THREE MILE ISLAND" PLANT MODIFICATIONS SEE NOTES 3 & 4

2. "CIRCUIT TYPE" DESIGNATIONS ARE USED TO FUNCTIONALLY DESCRIBE THE PURPOSE OF A CIRCUIT. THESE ARE PURELY FUNCTIONAL DESCRIPTIONS AND SHOULD NOT BE CONFUSED WITH PHYSICAL ROUTING DESIGNATIONS. LIST TABLE OR CIRCUIT TYPE DESIGNATIONS - FROM CABLE SCHEDULE



480 VOLT SYSTEM CHANNELIZATION OF LOGIC SIGNALS



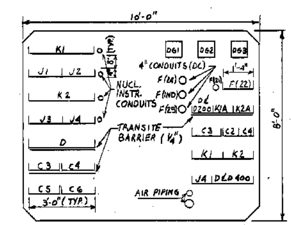
480 VOLT SYSTEM CHANNELIZATION OF D.C. CONTROL POWER

NOTES CONTINUED:

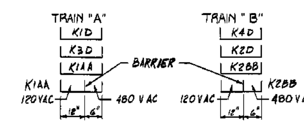
4. IN THE ORIGINAL PLANT DESIGN SEPARATION WAS SET UP ON A CIRCUIT BY CIRCUIT BASIS RATHER THAN A "UNITIZED" FIXED "BUS TO ROUTING CHANNEL" ASSOCIATION (e.g. C1 ≡ BUS 5A) SINGLE FAILURE IS MET FOR THESE CASES BECAUSE OF THE FLEXIBILITY OF REDUNDANT TRAIN A AND B LOGIC AND CONTROL SIGNALS TO EACH BUS (i.e. LOSS OF ONE TRAY MAY FAIL A CONTAINMENT SPRAY PUMP ON ONE BUS AND AN SI PUMP ON ANOTHER BUS BUT CONTROL FROM ONE OR THE TWO D.C. SYSTEMS WILL STILL BE AVAILABLE TO BOTH BUSES.
IN ALL FUTURE MODIFICATIONS THE "UNITIZED" BUS / ROUTING ASSOCIATIONS AS SHOWN ON THE TABLE ARE PREFERRED. EXCEPTIONS WILL BE PERMITTED FOR NON-1E EQUIPMENT WHERE NECESSARY TO MAINTAIN THE ORIGINAL PLANT CRITERIA OF MINIMIZING PHYSICAL CROSSOVERS IN THE CABLE RACE-WAY SYSTEM.

5. AS ESTABLISHED BY THE ORIGINAL PLANT DESIGN CRITERIA AND SUBSEQUENT MODIFICATIONS ALL NON CLASS 1E CIRCUITS (POWER, CONTROL AND INSTRUMENTATION) WERE ROUTED IN TRAYS OR CONDUITS CONVENIENT TO THE TERMINATION POINTS. THIS WAS ACCOMPLISHED BY ROUTING CABLE IN ANY SAFTEY GRADE CHANNELS AND AS SUCH TREATED AS AN "ASSOCIATED CIRCUIT". THEREFORE NO "TRAY HOPPING" WAS PERMITTED AND ONCE A NON 1E CIRCUIT WAS ASSIGNED TO A SAFEGUARD ROUTING CHANNEL IT MUST HAVE REMAINED IN THAT CHANNEL THROUGHOUT THE WHOLE RUN.

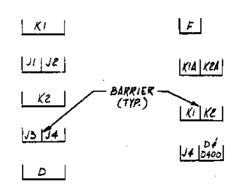
6. ALL CABLES IN RACEWAYS SHALL MEET THE LATEST CON EDISON SPECIFICATION EO-13 AND BE QUALIFIED TO IEEE 383. COMMERCIAL GRADE CABLE AND IMC CONDUIT IS ONLY PERMITTED FOR LIGHTING, RECEPTACLES, AND OTHER SERVICES NOT ASSOCIATED WITH PLANT PROCESS SYSTEMS (M.O. BUILDING, TSC, RESPIRATOR FACILITY, PLANT OFFICES ETC.).
ALL TERMINAL BLOCKS INSTALLED SHALL BE QUALIFIED TO IEEE 323 AND 344 TO ASSURE THEIR AVAILABILITY FOR FUTURE CLASS "A"/CLASS "1E" TERMINATIONS.



TYPICAL SECTION CABLE TUNNEL



TYPICAL SECTION ON EL. 98'-0" RA.B.



TYPICAL SECTION CABLE SPREADING ROOM

REVISIONS

THIS REV. IS CLASS "A" AS PER CI-240-1 MOD PROC. ESG 80-2-21 RELEASED FOR INFORMATION P.N. 90049-50 2/4/81 RS/JAC — 1

THIS REV. IS CLASS "A" AS PER CI-240-1, ADDED NOTE #6. MOD. PROC. ESG 80-2-21 REL. FOR INFO. P/N 90049-50 — 2

THIS REVISION IS CLASS "A" PER CI-240-1 UPDATED DWG TO SHOW WORK OF REV. 0 & 1 MOD. PROC. ESG-80-2-21 RELEASED FOR AS CONSTRUCTED P.N. 90049-50 6-8-84

V.I. 4/18/99 — 03
THIS REVISION IS NON-CLASS PER CI-240-1 UPDATED DRAWING TO INCLUDE UFSAR FIGURE No. IN TITLE P/N 6991-NP RELEASED FOR RECORD DLA/4/18/99
STRATUS ENGINEERING

THIS DRAWING CONTAINS ITEMS WHICH MUST BE CONTROLLED WITHIN CON EDISON AS: "CLASS A" ITEMS PER CI-240-1

A 208761-3

CONSOLIDATED EDISON CO. OF NEW YORK, INC.

STATION LOCATION: INDIAN POINT
CABLE TRAY SEPARATION FUNCTIONS & ROUTING DESIGNATIONS - OUTLINE - UFSAR FIGURE No. 8.2-18 (03)
SCALE: NONE | DRAWN BY: R SCHNURER | RECORDED: 2-4-81
P.N.: 90049-50 | CHECKED BY: JAC

APPROVALS: GENERAL ENGINEERING – CHIEF DESIGN ENGINEER; MECHANICAL ENGINEERING – MECH. PLANT ENGINEER; CIVIL ENGINEERING – PLANT STRUCT. ENGINEER, T. & D. STRUCT. ENGINEER; ELECTRICAL ENGINEERING – STATION ELECT. ENGINEER, T & D. ENGINEER; GAS & STEAM OPERATIONS – STRUCT. ENGINEER; PRODUCTION – CONVENTIONAL POWER, NUCLEAR POWER

EG