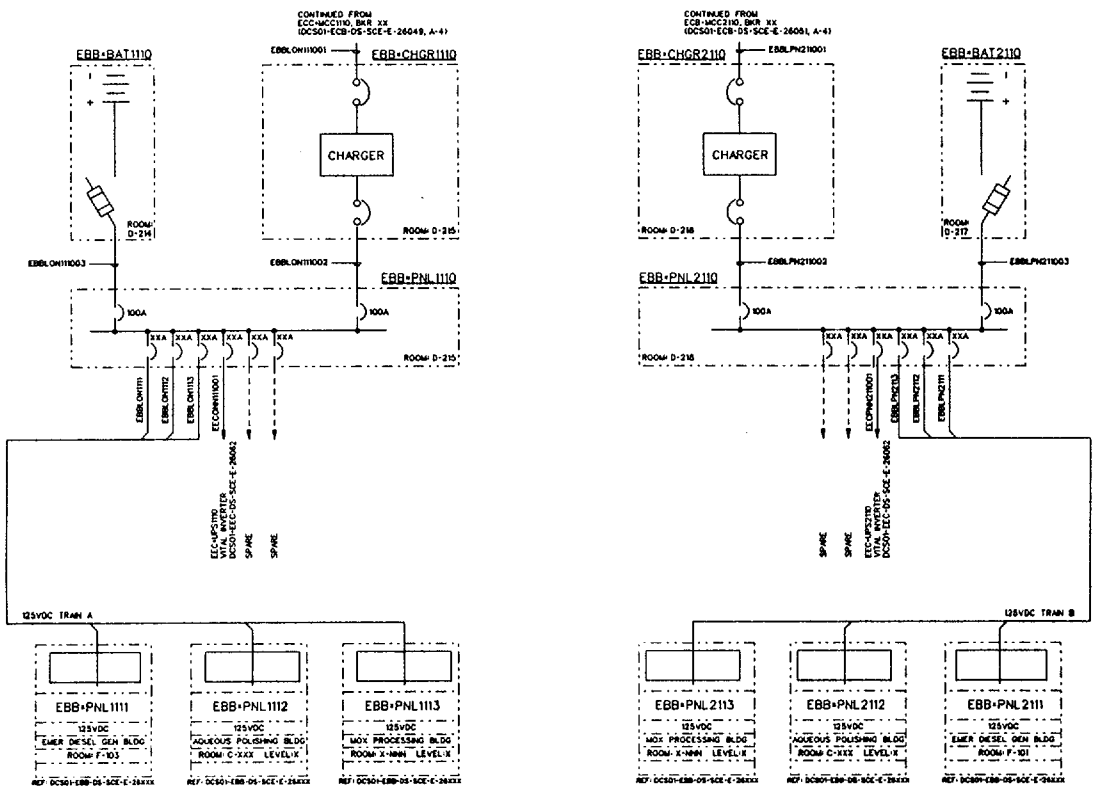
ATTACHMENT 4

DCS Electrical Drawings



PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
125VDC POWER, EMERGENCY
EBB-PNL1110 & 2110
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 of 1

DRG	FCT	OF	TYPE	DRG NUMBER	REV.
DCS01	EBB	DS	SCE	E 26061	A

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	FCM APPR/DATE	FDM APPR/DATE
A	ISSUED FOR FINAL DESIGN	RGH			

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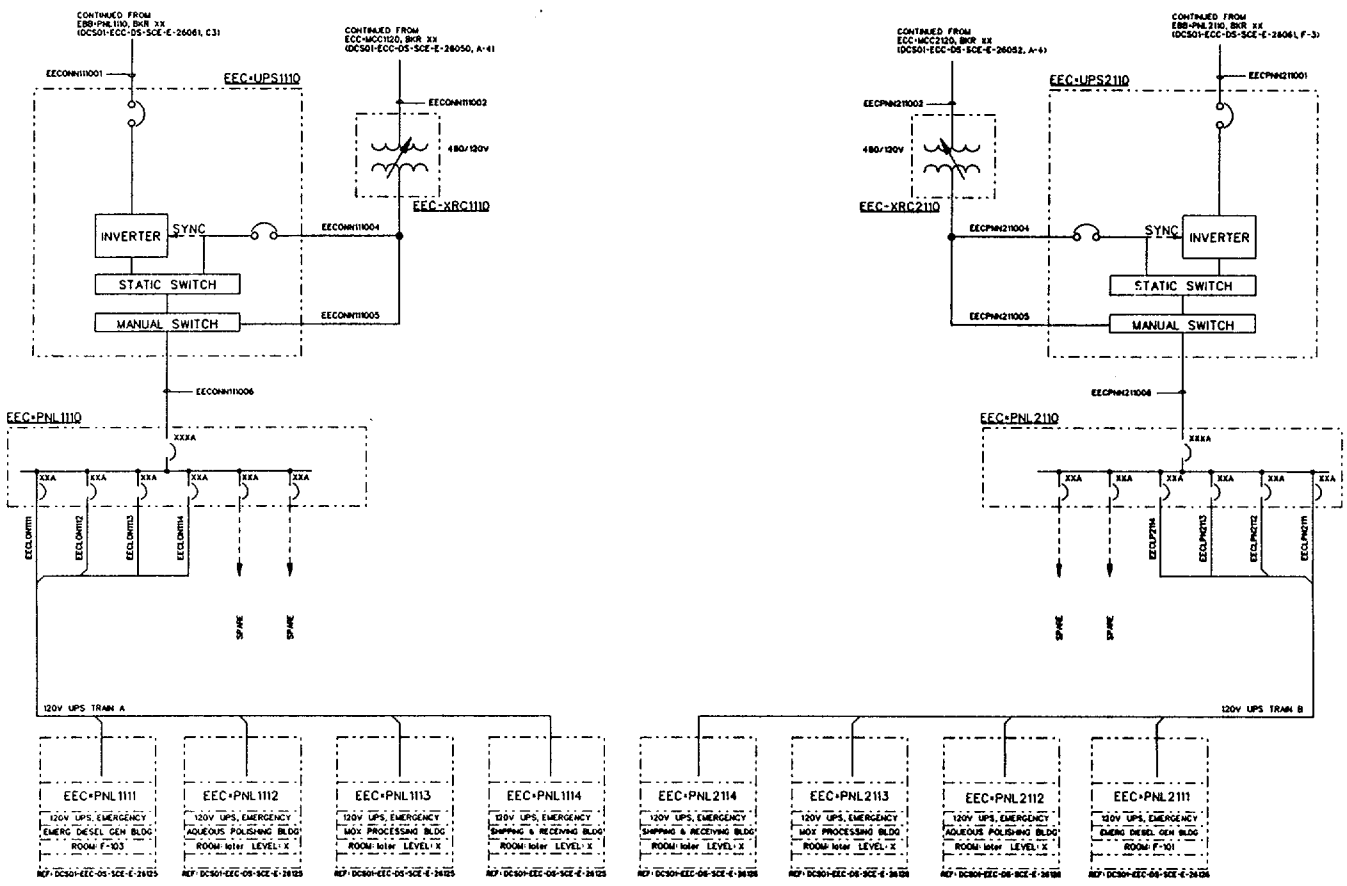
DATE: 08-OCT-2001 FILENAME: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX



PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
120 VITAL POWER
EEC-PNL1110 & 2110
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 1

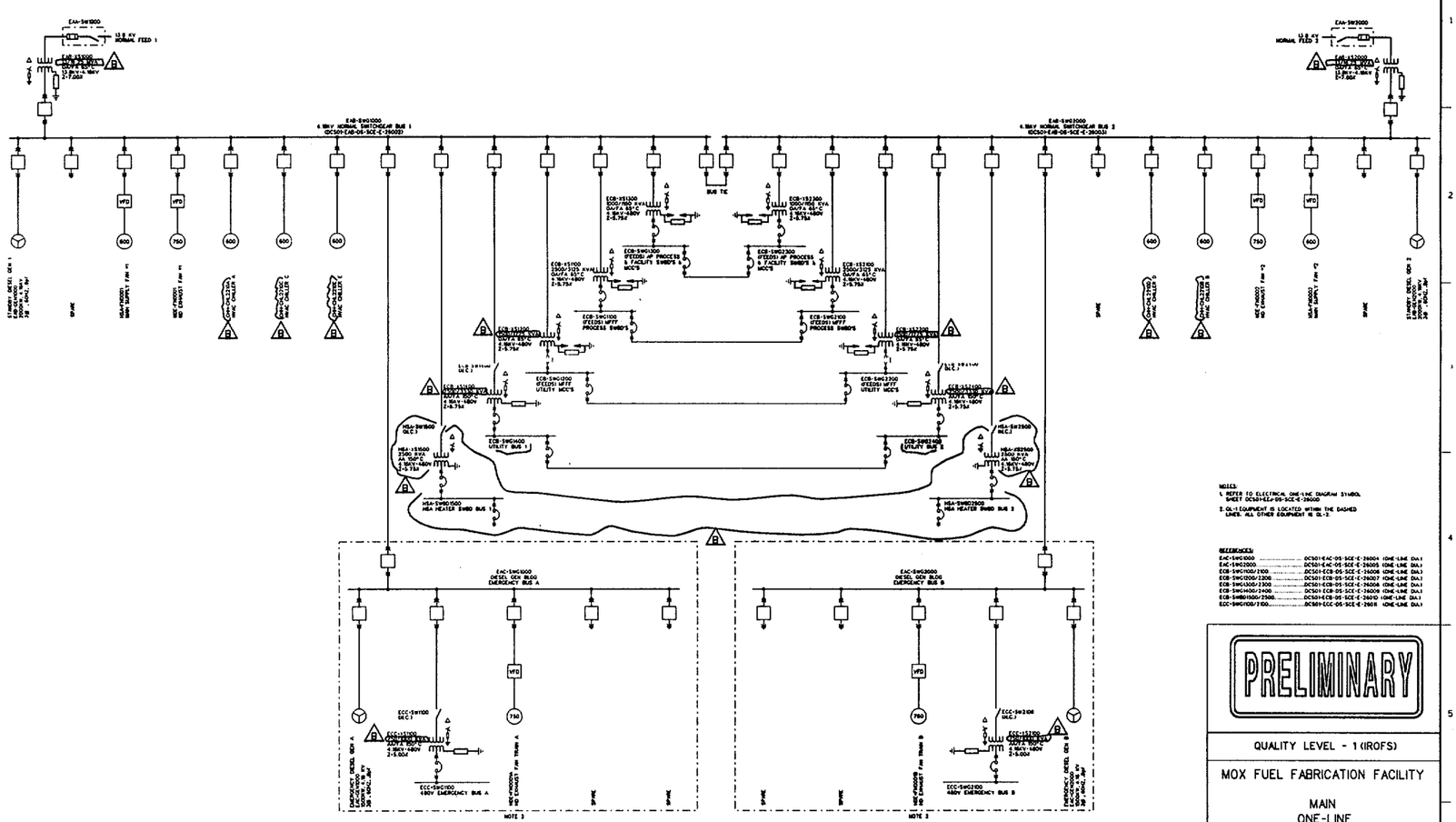
ORG	FCT.	OF	TYPE	DSC.	NUMBER	REV.
DCS01	EEC	DS	SCE	E	26062	A

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
																A	ISSUED FOR FINAL DESIGN						

CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

1 DESIGN REVIEW

e2606201.dgn



NOTES:
1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DCS01-EE/DS-SCE-E-26000
2. GL-1 EQUIPMENT IS LOCATED WITHIN THE DASHED LINES. ALL OTHER EQUIPMENT IS GL-3.

REFERENCES:

EAC-SWG1000	DCS01-EAC-DS-SCE-E-26004 (ONE-LINE DIA.)
EAC-SWG2000	DCS01-EAC-DS-SCE-E-26005 (ONE-LINE DIA.)
ECB-SWG1100/2100	DCS01-ECB-DS-SCE-E-26006 (ONE-LINE DIA.)
ECB-SWG2200/2300	DCS01-ECB-DS-SCE-E-26007 (ONE-LINE DIA.)
ECB-SWG1300/2300	DCS01-ECB-DS-SCE-E-26008 (ONE-LINE DIA.)
ECB-SWG1400/2400	DCS01-ECB-DS-SCE-E-26009 (ONE-LINE DIA.)
ECB-SWG1500/2500	DCS01-ECB-DS-SCE-E-26010 (ONE-LINE DIA.)
ECC-SWG1100/2100	DCS01-ECC-DS-SCE-E-2601 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY

MAIN
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

ORG	FCI	DP	TYP	DSC	NUMBER	REV
DCS01	EE/	DS	SCE	E	26001	B

BIN: ARCH 30 | SCALE: N/A | SHEET: 1 of 1

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE
		PDM APPR/DATE	FDM APPR/DATE			PDM APPR/DATE	FDM APPR/DATE			PDM APPR/DATE	FDM APPR/DATE
DRAWN				DRAWN				DRAWN			
CHECKED	REP. DIC. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE			CHECKED	REP. DIC. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE			CHECKED	REP. DIC. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER	

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE
B	REVISED XFMR SIZES, EQ ID NO's, DELETED 1500/2500 BUS TIE ISSUED FOR FINAL DESIGN		
DRAWN		PDM APPR/DATE	FDM APPR/DATE
MEH			
CHECKED	REP. DIC. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER	

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE
A	ISSUED FOR IFD	C-6 10-9-98	
DRAWN RGH		PDM APPR/DATE	FDM APPR/DATE
CHECKED JDP 27-9-98	REP. DIC. R.F.JACKSON / REVIEWED ST.LOUIS / REVIEWED MCCONAGHY / REVIEWED HENNESSI / COMPLIANCE N/A	MECH. DC BONGER	28-9-98
STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER	
N/A	N/A / N/A	FREEZING AREAS	

4 DESIGN REVIEW

e2600101.dgn

DATE: 10-OCT-2001 FILENAME: ********************

METER OR INSTRUMENT:

≠ ≤ ≥ ≡ ∩ △

POWER BUS

CURRENT

POTENTIAL

SIGNAL
(ARROW INDICATES DIRECTION)

N.C. 2000A
E.O.
3000A/ 3000A
LTA
STA
O

AIR CIRCUIT BREAKER, ELECTRICALLY OPERATED
1500VAC AND BELOW
OUTSIDE BLOCK(S):
UPPER BLOCK - BREAKER FRAME RATING
OPERATOR:
E.O.- ELECTRICALLY OPERATED
M.O.- MANUALLY OPERATED
N.C.- NORMALLY CLOSED
N.O.- NORMALLY OPEN
LOWER BLOCK - SENSOR RATING/PLUG RATING
OUTSIDE FRONT BLOCK(S):
RIGHT BLOCK - GROUND OR OVERVOLTAGE PROTECTION
G- GROUND ADJUSTABLE PICKUP & ADJUSTABLE TIME
ST- SHUNT TRIP
UV- UNDERVOLTAGE TRIP
INSIDE BLOCK(S):
UPPER BLOCK - TYPE OF OVERCURRENT PROTECTION
M- MAGNETIC
T- THERMAL
LOWER BLOCK - OVERCURRENT PROTECTION
LTA- LONG TIME ADJUSTABLE PICKUP & ADJUSTABLE TIME
LTP- LONG TIME ADJUSTABLE PICKUP & PRESET TIME
STA- SHORT TIME ADJUSTABLE PICKUP & ADJUSTABLE TIME
STP- SHORT TIME ADJUSTABLE PICKUP & PRESET TIME
IA- INSTANTANEOUS ADJUSTABLE PICKUP
IP- INSTANTANEOUS PRESET PICKUP

1600A POWER CIRCUIT BREAKER ABOVE 1500VAC
UPPER BLOCK - BREAKER FRAME RATING

3200A FUSED DISCONNECT SWITCH
LEFT BLOCK - FUSE AMPERE RATING

3200A POWER DISCONNECT SWITCH, MANUALLY OPERATED
LEFT BLOCK - SWITCH AMPERE RATING

POTENTIAL TEST SWITCH

CURRENT TEST SWITCH

600AF 200AT 3P MOLDED CASE CIRCUIT BREAKER, 600VAC AND BELOW AND ALL DC ELECTRICALLY OPERATED BREAKERS
LEFT BLOCK :
UPPER BLOCK - FRAME AMPERE RATING
LOWER BLOCK - PLUG AMPERE RATING
RIGHT BLOCK :
UPPER BLOCK - NUMBER OF POLES
LOWER BLOCK - PLUG RATING

150AF 75AT 3P 4FVNR MCC BREAKER WITH TRIP COIL
LEFT BLOCK :
UPPER BLOCK - FRAME AMPERE RATING
LOWER BLOCK - PLUG AMPERE RATING
RIGHT BLOCK :
UPPER BLOCK - NUMBER OF POLES
LOWER BLOCK - STARTER/CONTACTOR SIZE & TYPE

FVC - FULL VOLTAGE CONTACTOR
FVNR - FULL VOLTAGE NON-REVERSING
FVR - FULL VOLTAGE REVERSING
RVNR - REDUCED VOLTAGE NON-REVERSING
2SN - TWO SPEED ONE WINDING
2SW - TWO SPEED TWO WINDING

STABS, DISCONNECTING DEVICE FOR DRAW-OUT EQUIPMENT

THERMAL ELEMENT
(BIMETALLIC OR SOLID STATE)

GROUND

CONTACTOR OR CONTACT, NORMALLY OPEN

CONTACT, NORMALLY CLOSED

43 METER OR INSTRUMENT:
INSIDE BLOCK - TYPE & SUPPLEMENTAL NO.
A- AMMETER
EQH- ELAPSED TIME METER
W- WATTHOUR METER
PF- POWER FACTOR METER
E- VOLTMETER
J1- VARMETER
J2- WATTMETER
JQ- POWER (TOTALIZED) INDICATOR
WATTMETER
WATT HOUR METER
WATTHOUR DEMAND METER
VARMETER
VAR HOUR METER
VAR HOUR DEMAND METER
OUTSIDE BLOCK - QUANTITY

ET-2 1 08 SWITCH OR TRANSMITTER:
INSIDE BLOCK - TYPE & SUPPLEMENTAL NO.
IS- AMMETER SWITCH
ES- VOLTAGE SWITCH
ET- VOLTAGE TRANSMITTER
ET- VOLTAGE TRANSMITTER
JT1- VAR TRANSMITTER
JT2- WATT TRANSMITTER
JT3- WATT/VAR TRANSMITTER
ST- FREQUENCY TRANSDUCER
OUTSIDE BLOCKS
UPPER BLOCK - QUANTITY
LOWER BLOCK - PHASE

FUSE
UPPER BLOCK - QUANTITY
LOWER BLOCK - FUSE RATING

50 RELAY
INSIDE BLOCK - DEVICE FUNCTION
27- UNDERVOLTAGE
32- POWER DIRECTIONAL
40- LOSS OF EXCITATION
46- REVERSE PHASE OR PHASE UNBALANCE
49- THERMAL
50- INSTANTANEOUS OVERCURRENT
50/ AC TIME OVERCURRENT
51G- AC TIME OVERCURRENT WITH GROUND SENSOR
51V- VOLTAGE RESTRAINT OVERCURRENT
59- VOLTAGE
60- VOLTAGE UNBALANCE
62- TIME DELAY
63- SUDDEN PRESSURE
63A- SUDDEN PRESSURE AUXILIARY
67- DIRECTIONAL OVERCURRENT
81- FREQUENCY
86- LOCKOUT
87- DIFFERENTIAL
OUTSIDE BLOCK - QUANTITY

RESISTOR

PUSHBUTTON CONTROL STATION

SELECTOR SWITCH

TRANSFER SWITCH

DIODE

BATTERY

DIESEL GENERATOR

PMG PMG - PERMANENT MAGNET GENERATOR

GEN EXCITER DIESEL GENERATOR EXCITER

35 MOTOR WITH HORSEPOWER RATING

WELDING RECEPTACLE, THREE PHASE, 480VAC, 100A OR 60A, AS NOTED

PLC INPUT/OUTPUT AVAILABLE TO OPERATOR

HEATER COIL

STATIC UNINTERRUPTIBLE POWER SUPPLY WITH STATIC BYPASS SWITCH
ELECTRICAL CAPACITY
BATTERY SIZE
OUTPUT VOLTAGE
OUTPUT CONFIGURATION
50 KVA
30 MIN.
120AF/120V
10,3W

STAR-W 2500/3500 KVA 13.8KV/4.16KV 13.8KV-480V Z-8.75% POWER TRANSFORMER, TWO WINDINGS, EQUIPMENT DESIGNATION
KVA RATING
VOLTAGE RATIO/TEMPERATURE
VOLTAGE RATING
IMPEDANCE @ OA RATING

3 600/5A MR 400/5A TAP BUSHING CURRENT TRANSFORMER
MR- MULTI-RATIO
TAP- RATIO USED
UPPER BLOCK - QUANTITY
MIDDLE BLOCK - FULL TRANSFORMER RATIO
LOWER BLOCK - RATIO USED

3 300/5A MR 150/5A TAP CURRENT TRANSFORMER
WINDOW TYPE, SINGLE RATIO, GROUND SENSING
MR- MULTI-RATIO
TAP- RATIO USED
UPPER BLOCK - QUANTITY
MIDDLE BLOCK - TRANSFORMER RATIO
LOWER BLOCK - CLASSIFICATION

1 600/5A CURRENT TRANSFORMER
WINDOW TYPE, SINGLE RATIO, GROUND SENSING
UPPER BLOCK - QUANTITY
LOWER BLOCK - TRANSFORMER RATIO
FOURTH LINE (DASHED) INDICATES NEUTRAL

1 3000/5A CURRENT TRANSFORMER
SINGLE RATIO, SINGLE SECONDARY, DELTA CONNECTED
UPPER BLOCK - QUANTITY
LOWER BLOCK - TRANSFORMER RATIO

3 3000/5A CURRENT TRANSFORMER
SINGLE SECONDARY, WYE CONNECTED
UPPER BLOCK - QUANTITY
LOWER BLOCK - TRANSFORMER RATIO

3 POTENTIAL TRANSFORMER
TWO WINDING, SINGLE RATIO
UPPER BLOCK - QUANTITY
LOWER BLOCK - TRANSFORMER RATIO

15KV SC 3 SURGE ARRESTOR
UPPER BLOCK - VOLTAGE RATING AND CLASS
SC- STATION CLASS
IC- INTERMEDIATE CLASS
DC- DISTRIBUTION CLASS
LOWER BLOCK - QUANTITY

WYE

DELTA

BROKEN DELTA

OPEN DELTA

TRANSFORMER CONNECTIONS

480V-120V REGULATING TRANSFORMER

CURRENT TEST RECEPTACLE

A TRANSDUCER
A - AMPERES, F - FREQUENCY, PF - POWER FACTOR
V - VOLTAGE, W - WATTS, VAR - REACTIVE VOLT AMPERES,
T - TEMPERATURE

VFD VARIABLE FREQUENCY DRIVE

PRELIMINARY

QUALITY LEVEL 4

MOX FUEL FABRICATION FACILITY

ELECTRICAL
ONE-LINE DIAGRAM
SYMBOL SHEET

KEY PLAN

DUKE ENGINEERING & SERVICES

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 1

ORG	FCI	GI	TYP	SYM	NUMBER	REV
DCS01	EEJ	DS	SCE	E	26000	A

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DRAWN						PDH APPR/DATE	FDH APPR/DATE	DRAWN						PDH APPR/DATE	FDH APPR/DATE	DRAWN						PDH APPR/DATE	FDH APPR/DATE	DRAWN						PDH APPR/DATE	FDH APPR/DATE	DRAWN	ISSUED FOR FPD					N/A PDH APPR/DATE	20 JUL 00 FDH APPR/DATE
CHECKED	RESP. DAC	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. DAC	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. DAC	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. DAC	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. DAC	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. DAC	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. DAC	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	N/P	18 JUL 00
STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER		STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER		STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER		STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER		STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER	
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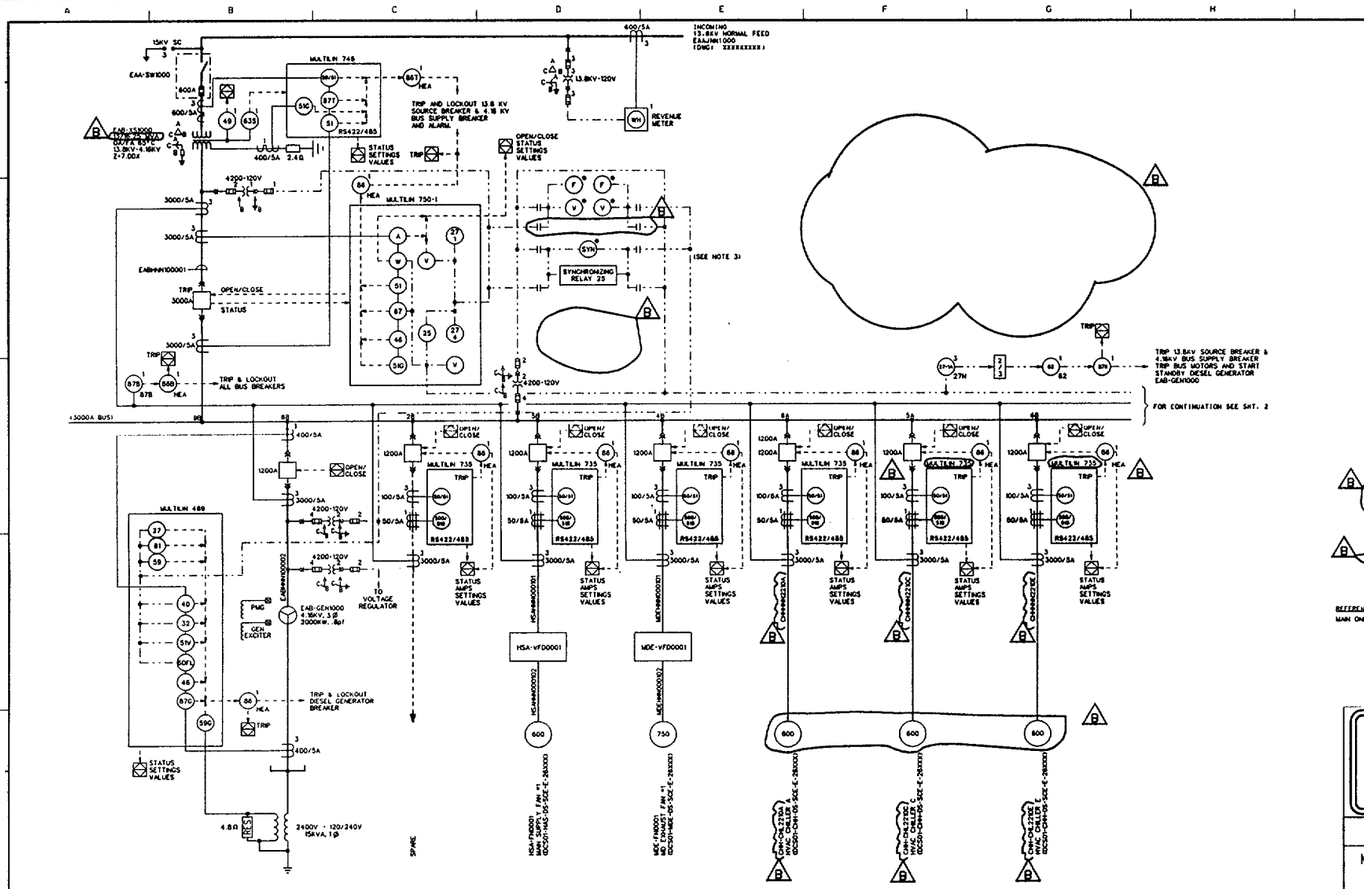

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
4.16KV NORMAL SWGR BUS 1
EAB-SWG1000
ONE-LINE
DIAGRAM

DUKE ENGINEER & CONSTRUCTOR

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 3

ORL	FCI	SP	FUN	DOC NUMBER	REV
DCS01	EAB	DS	SCE	E 26002	B

ISSUE	DESCRIPTION	DRAWN	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	DESIGN MANAGER APPROVALDATE	LEAD APPROVALDATE
B	REVISED X'FMR SIZE, SYNC. CKT., CABLE ID'S ADD/REV. NOTES, LEGEND, REV. ALL CUB. NO'S ISSUED FOR FINAL DESIGN	MDH	27-10-00	N/A	N/A	N/A	N/A	N/A	26-10-00	26-10-00
A	ISSUED FOR FPD									

STRUCTURAL | MECHANICAL | ELECTRICAL | OTHER

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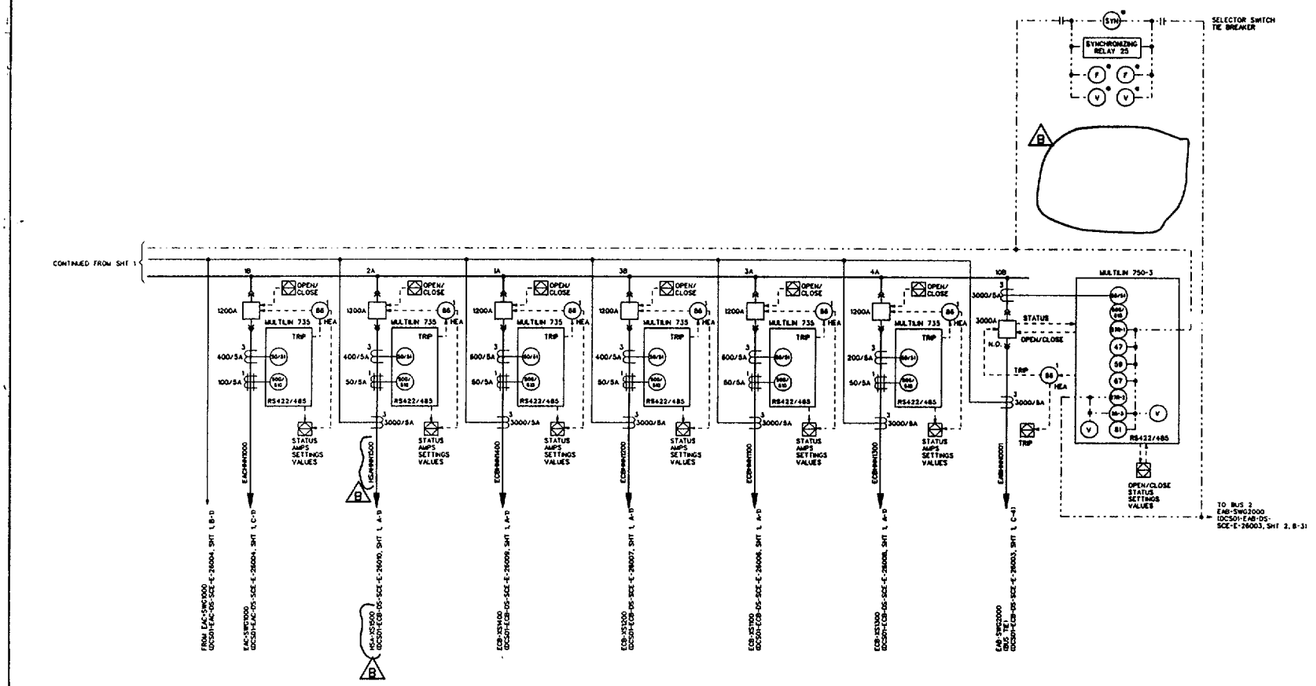

NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-EEJ-DS-SCE-E-26000
2. ALL BREAKERS SHALL HAVE OPEN/CLOSE SWITCHES AT SWITCHGEAR

LEGEND:

- DEVICE LOCATED AT SWITCHGEAR

REFERENCES:

MAIN ONE-LINE DIAGRAM ..... DC501-EEJ-DS-SCE-E-26001 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
4.16KV NORMAL SWGR BUS 1
EAB-SWG1000
ONE-LINE
DIAGRAM

BECHTEL STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

REV	SCALE	SHEET
D	N/A	2 OF 3

REV	DESCRIPTION	DESIGN VERIFIED APPLICABLE	LEAD APPROVALS
A	ISSUED FOR FPO	N/A	N/A
B	REVISED XFMR SIZE, SYNC CKT, CABLE ID'S, ADD/REV. NOTES, LEGEND, REV. ALL CUB. NO.'S ISSUED FOR FINAL DESIGN	N/A	N/A
D	REVISED ALL	N/A	N/A

- DESIGN REVIEW

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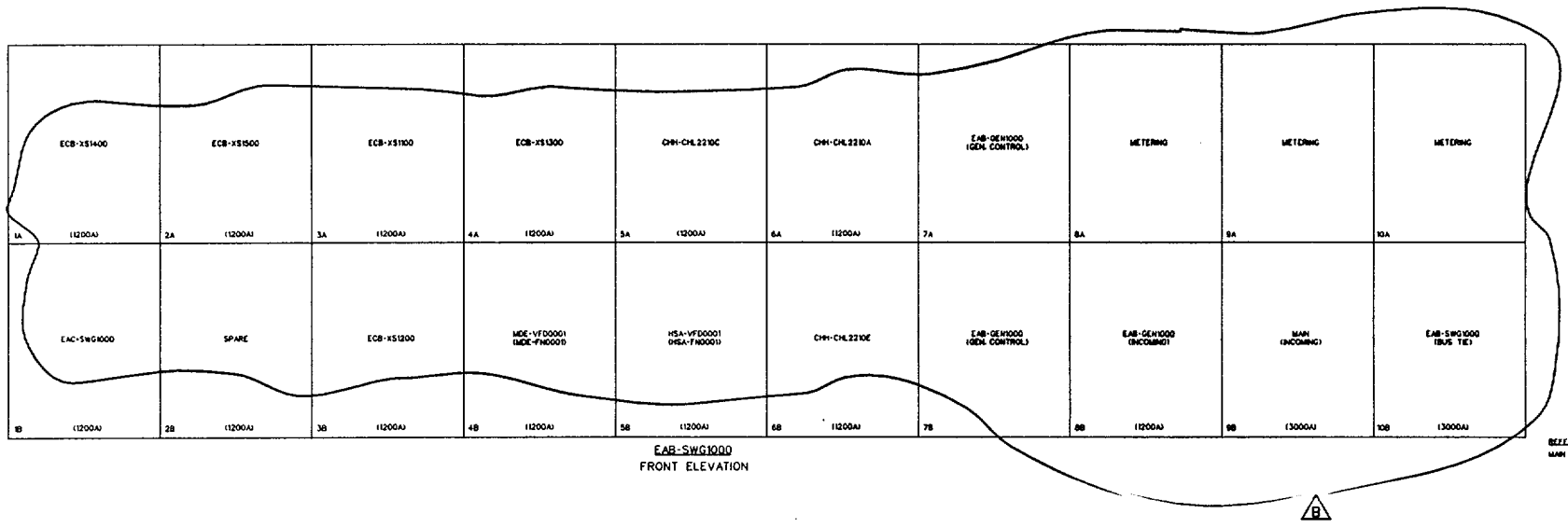

EAB-SWG1000
FRONT ELEVATION

REFERENCES
MAIN ONE-LINE DIAGRAM ..... DCS01-EEJ-DS-SCE-E-26001 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
4.16KV NORMAL SWGR BUS 1
EAB-SWG1000
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER
		PDM APPR/DATE	FDM APPR/DATE										
B	REVISED EO D's, MOVED LOADS ISSUED FOR FINAL DESIGN	PDM APPR/DATE	FDM APPR/DATE	MDH	RF. JACKSON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A	ISSUED FOR FPD	N/A	28-11-00	BGH	RF. JACKSON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		PDM APPR/DATE	FDM APPR/DATE										
		N/A	24-11-00										

BLD	SCALE	SHEET
D	N/A	3 OF 3

ORG.	FCT	CB	TYP. DOC.	NUMBER	REV.
DCS01	EAB	DS	SCE	E 26002	B

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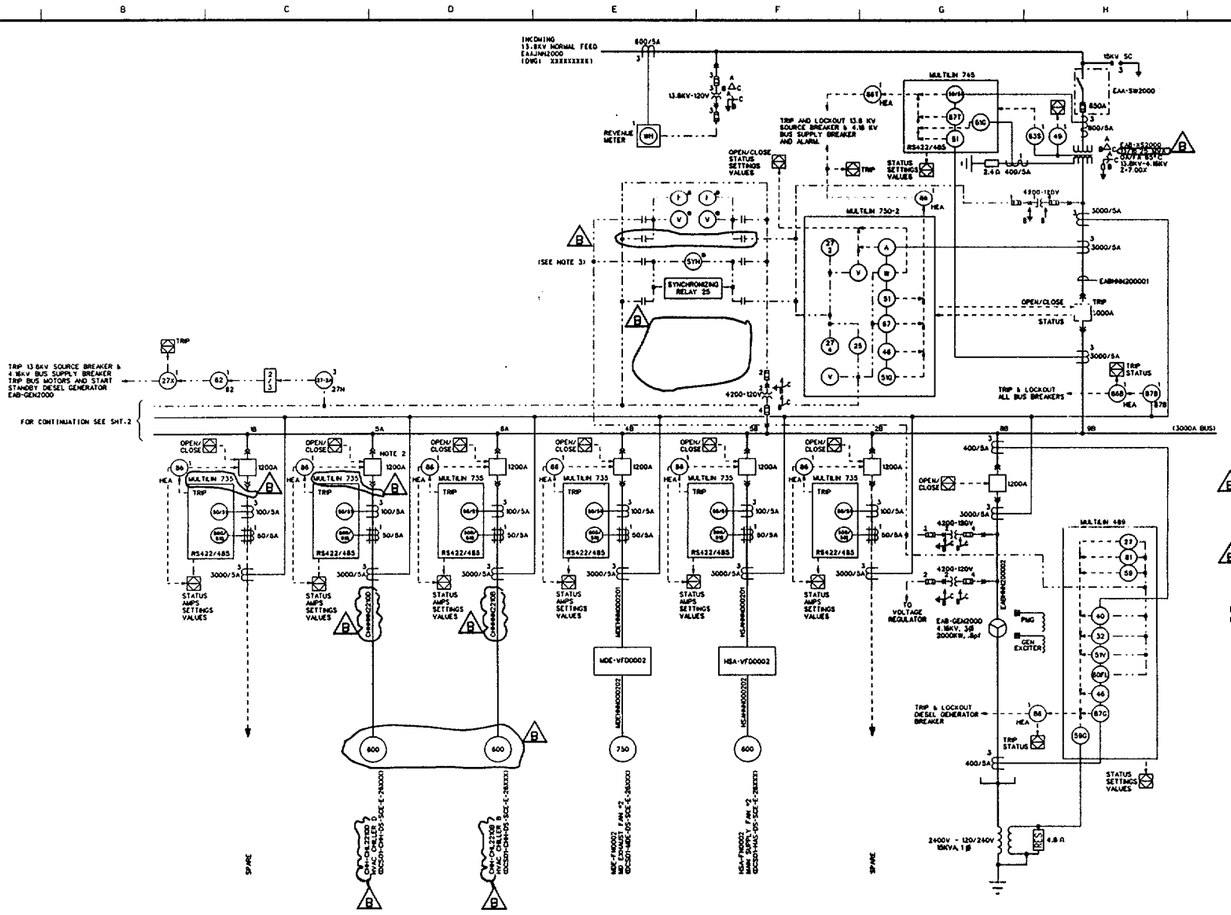

NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-EEJ-05-SCE-E-26000.
2. ALL BREAKERS SHALL HAVE OPEN/CLOSE SWITCHES AT SWGR.
3. SYNCH SWITCH WITH THREE POSITIONS: OFF, SYNCH ACROSS MAIN BREAKER, SYNCH ACROSS GENERATOR BREAKER

LEGEND:

- DEVICE LOCATED AT SWITCHGEAR

REFERENCES:

MAIN ONE-LINE DIAGRAM ..... DC501-EEJ-05-SCE-E-26001 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
4.16KV NORMAL SWGR BUS 2
EAB-SWG2000
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-98CH10888

SIZE	FILE	SCALE	SHEET
D	N/A	N/A	1 OF 3

SITE	FCF	OF	LINE DSC	FIGURE	REV.
DC501	EAB	DS	SCE	E	26003	B

ISSUE	DESCRIPTION	DESIGN REVIEW APPROVALS	LSE APPROVALS
B	REVISED XFMR SIZE, SYNC CKT, CABLE IDS. ADD/REV. NOTES, LEGEND, REV. ALL CUB. NO.'S ISSUED FOR FINAL DESIGN		
A	ISSUED FOR FPD		

DESIGN REVIEW APPROVALS	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER
RESP. ENG.				
REVIEWER				
REVIEWER				
REVIEWER				
COMPLIANCE				
FOR APPROVALS				

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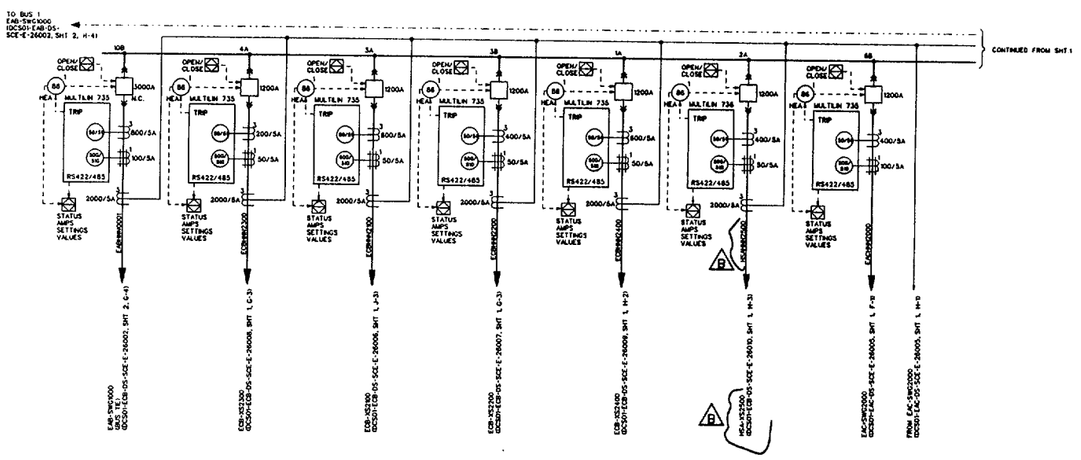


NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET, DC501-EE-J-DS-SCE-E-26000
2. ALL BREAKERS SHALL HAVE OPEN/CLOSE SWITCHES AT SWITCHGEAR.

MAIN ONE-LINE DIAGRAM.....DC501-EE-J-DS-SCE-E-26001 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
4.16KV NORMAL SWGR BUS 2
EAB-SWG2000
ONE-LINE
DIAGRAM

DUKE ENGINEERING & SERVICES

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	3 OF 3

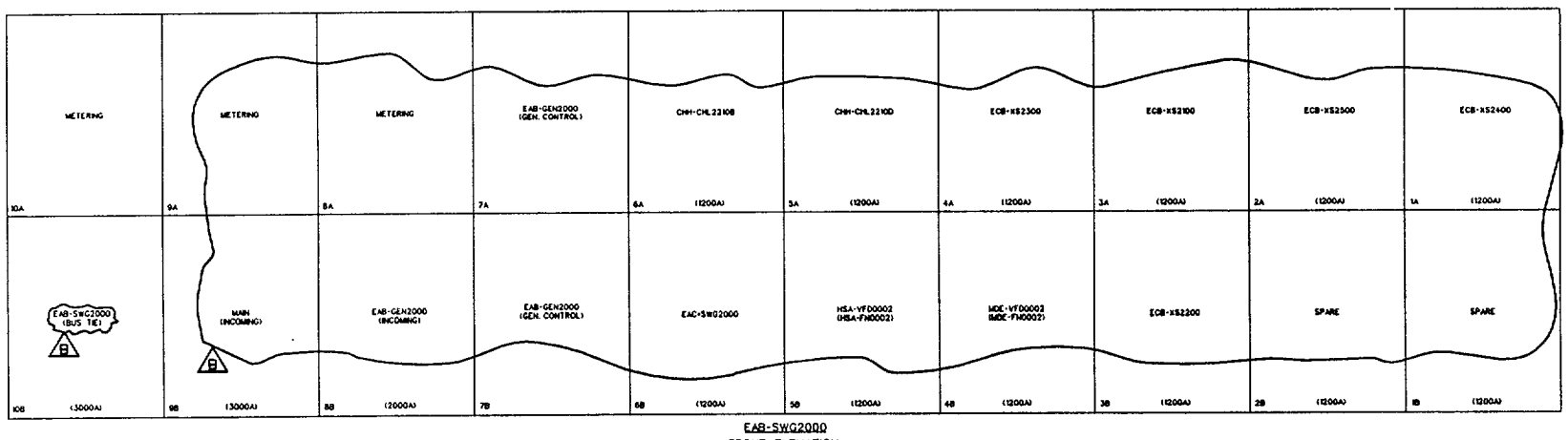
ORG	FCI	OP	TYPE	DOC NUMBER	REV
DC501	EAB	DS	SCE	E 26003	B

◊ DESIGN REVIEW

e2600303.dgn

ISSUE	DESCRIPTION	DESIGN HOLDER APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN HOLDER APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN HOLDER APPR/DATE	LEAD APPR/DATE	ISSUE B	DESCRIPTION: ADDED NOTE 2, REV. CABLE NO AND EQ ID REV. ALL CUB. NO.S, ISSUED FOR FINAL DESIGN	DESIGN HOLDER APPR/DATE	LEAD APPR/DATE	ISSUE A	DESCRIPTION: ISSUED FOR FPD	DESIGN HOLDER APPR/DATE	LEAD APPROVAL EARLIEST
DRAWN				DRAWN				DRAWN				DRAWN MDH				DRAWN BDH		N/A	30-11-00
CHECKED	REP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPR/DATE	FOH APPR/DATE	CHECKED	REP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPR/DATE	FOH APPR/DATE	CHECKED	REP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPR/DATE	FOH APPR/DATE	CHECKED	REP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPR/DATE	FOH APPR/DATE	CHECKED	REP. ENG. REF. ANDERSON / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPR/DATE	FOH APPROVAL DATE 30-11-00
STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL / ELECTRICAL	OTHER		STRUCTURAL N/A	MECHANICAL N/A / ELECTRICAL N/A	OTHER N/A	

DATE: 09-OCT-2001 FILENAME: ********************



EAB-SWG2000
FRONT ELEVATION

REFERENCES:
MAIN ONE-LINE DIAGRAM..... DCS01-EEJ-DS-SCE-E-26001 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
4.16KV NORMAL SWGR BUS 2
EAB-SWG2000
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	3 OF 3

ORG	FCI	SP	TYP	DSC	NUMBER	REV.
DCS01	EAB	OS	SCE	E	26003	B

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LOE APPR/DATE	DRAWN	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PDM APPR/DATE	FDM APPR/DATE
		STRUCTURAL	MECHANICAL		ELECTRICAL		OTHER					

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LOE APPR/DATE	DRAWN	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PDM APPR/DATE	FDM APPR/DATE
		STRUCTURAL	MECHANICAL		ELECTRICAL		OTHER					

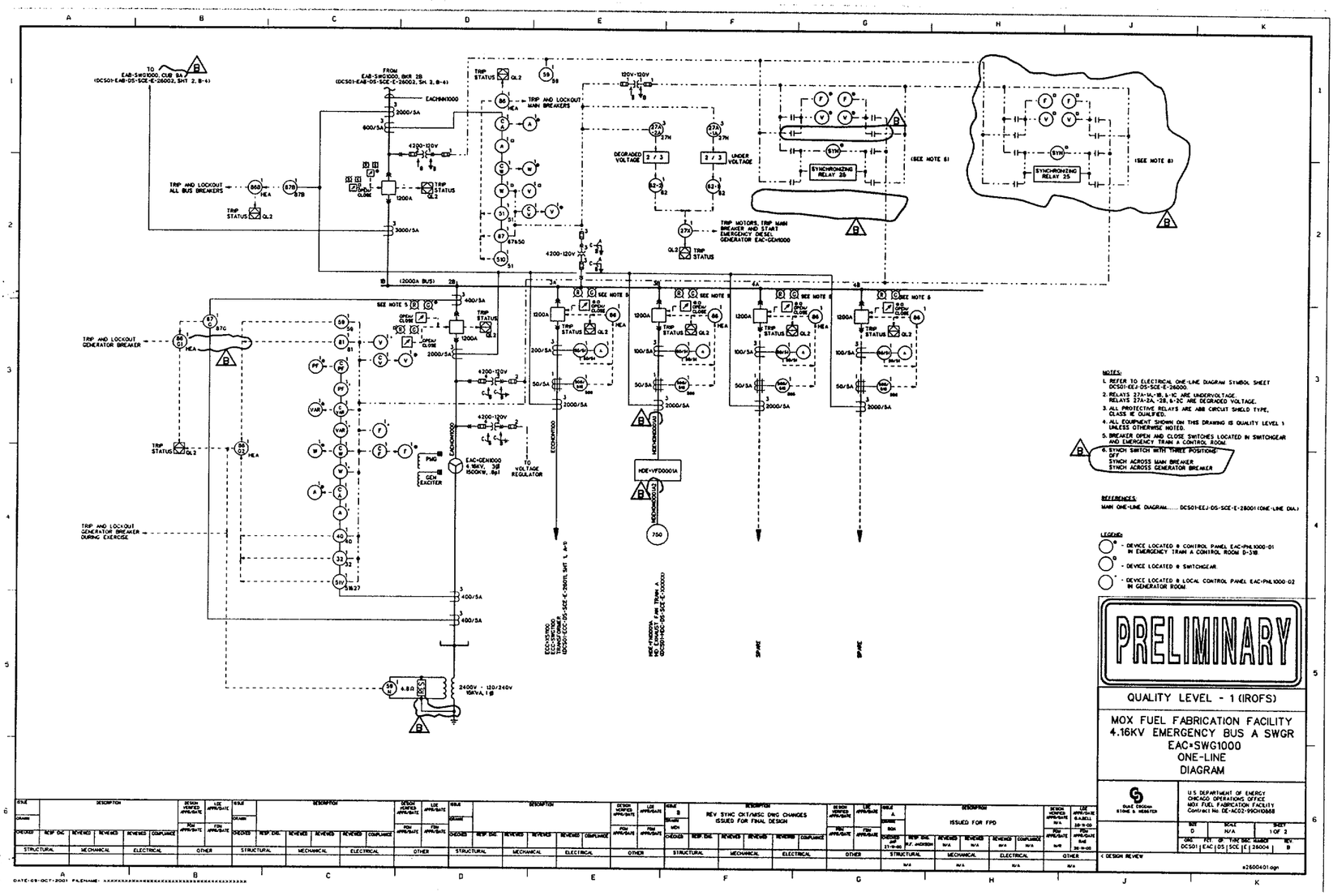
ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LOE APPR/DATE	DRAWN	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PDM APPR/DATE	FDM APPR/DATE
		STRUCTURAL	MECHANICAL		ELECTRICAL		OTHER					

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LOE APPR/DATE	DRAWN	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PDM APPR/DATE	FDM APPR/DATE
B	REVISED EQ ID NO's, MOVED LOADS ADDED GEN. CNTRL CUB. ISSUED FOR FINAL DESIGN			MDH								
		STRUCTURAL	MECHANICAL		ELECTRICAL		OTHER					

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LOE APPR/DATE	DRAWN	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PDM APPR/DATE	FDM APPR/DATE
A	ISSUED FOR FPD	N/A		RDH	JHP 31-11-00	R.F. JACKSON	N/A	N/A	N/A	N/A	N/A	30-11-00 RHB 30-11-00
		STRUCTURAL	MECHANICAL		ELECTRICAL		OTHER					

< DESIGN REVIEW

e2600503.dgn



NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-EEJ-DS-SCE-E-26000.
2. RELAYS 27A-1A,-1B,&-1C ARE UNDERVOLTAGE. RELAYS 27A-2A,-2B,&-2C ARE DEGRADED VOLTAGE.
3. ALL PROTECTIVE RELAYS ARE ABB CIRCUIT SHIELD TYPE, CLASS IE QUALIFIED.
4. ALL EQUIPMENT SHOWN ON THIS DRAWING IS QUALITY LEVEL 1 UNLESS OTHERWISE NOTED.
5. BREAKER OPEN AND CLOSE SWITCHES LOCATED IN SWITCHGEAR AND EMERGENCY TRAIN A CONTROL ROOM.
6. SYNCH SWITCH WITH THREE POSITIONS: OFF
   SYNCH ACROSS MAIN BREAKER
   SYNCH ACROSS GENERATOR BREAKER

REFERENCES:

MAIN ONE-LINE DIAGRAM..... DC501-EEJ-DS-SCE-E-28001 (ONE-LINE DIA.)

LEGEND:

- A - DEVICE LOCATED @ CONTROL PANEL EAC-PNL1000-01 IN EMERGENCY TRAIN A CONTROL ROOM D-3B
- B - DEVICE LOCATED @ SWITCHGEAR
- C - DEVICE LOCATED @ LOCAL CONTROL PANEL EAC-PNL1000-02 IN GENERATOR ROOM

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
4.16KV EMERGENCY BUS A SWGR
EAC*SWG1000
ONE-LINE
DIAGRAM

DUKE ENGINEERING & SERVICES, INC. STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 2

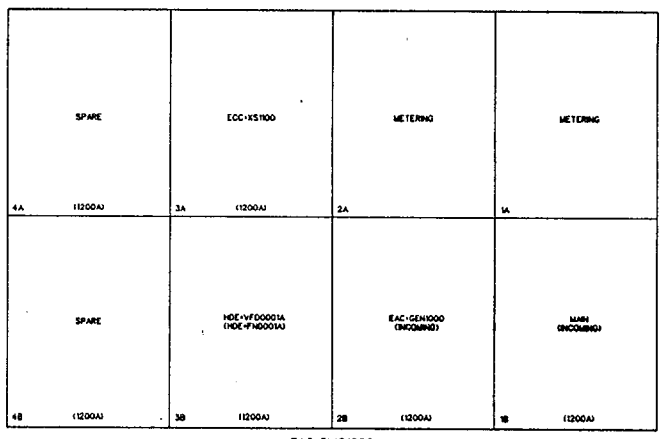
DWG	FYI	OF	TYPE	SEQ. NUMBER	REV
DC501	EAC	05	SCE	E 26004	B

< DESIGN REVIEW

e2600401.dgn

ISSUE	DESCRIPTION	DESIGN VERIFIER APPLICABLE	LEAD APPROVALS
A	ISSUED FOR FPD	N/A	RAMOLL 28-9-00
B	REV SYNC CKT/NRSC DWG CHANGES ISSUED FOR FINAL DESIGN	N/A	21-11-00

DATE: 09-OCT-2001 FILENAME: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx



EAC-SWG1000
FRONT ELEVATION

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
4.16KV EMERGENCY BUS A SWGR
EAC-SWG1000
ONE-LINE
DIAGRAM

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	2 OF 2

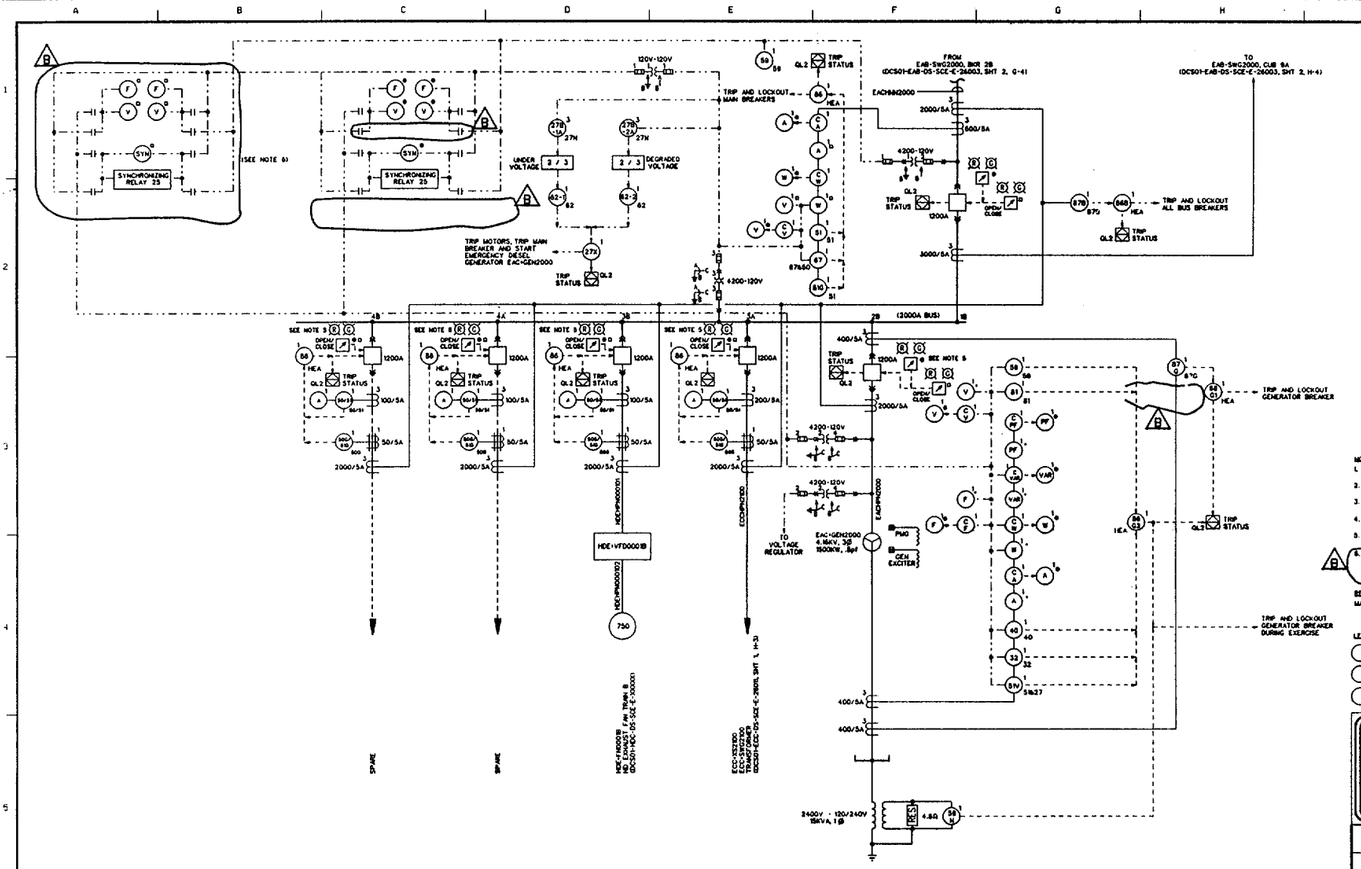
DRC	FCT.	OP.	TYP.	DSC.	NUMBER	REV.
DCS01	EAC	DS	SCE	E	26004	A

ISSUED FOR FPD

< DESIGN REVIEW

e26001402.dgn

DATE: 09-OCT-2001 FILENAME: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX



NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-EEJ-DS-SCE-E-26000
2. RELAYS 27A-1A,-1B, & -1C ARE UNDERVOLTAGE. RELAYS 27A-2A, -2B, & -2C ARE DEGRADED VOLTAGE.
3. ALL PROTECTIVE RELAYS ARE ABB CIRCUIT SHIELD TYPE, CLASS E QUALIFIED.
4. ALL EQUIPMENT SHOWN ON THIS DRAWING IS QUALITY LEVEL 1 UNLESS OTHERWISE NOTED.
5. BREAKER OPEN AND CLOSE SWITCHES LOCATED IN SWITCHGEAR AND EMERGENCY TRAIN B CONTROL ROOM.
6. SYNCH SWITCH WITH THREE POSITIONS: OFF, SYNCH ACROSS MAIN BREAKER, SYNCH ACROSS GENERATOR BREAKER

REFERENCES:

MAIN ONE-LINE DIAGRAM.....DC501-EEJ-DS-SCE-E-26001 (ONE-LINE DIA.)

LEGEND:

- DEVICE LOCATED @ CONTROL PANEL EAC-PNL2000-01 IN EMERGENCY TRAIN B CONTROL ROOM D-3B.
- DEVICE LOCATED @ SWITCHGEAR.
- DEVICE LOCATED @ LOCAL CONTROL PANEL EAC-PNL2000-02 IN GENERATOR ROOM.

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
4.16KV EMERGENCY BUS B SWGR
EAC*SWG2000
ONE-LINE
DIAGRAM

BECHTEL CORPORATION
STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 2

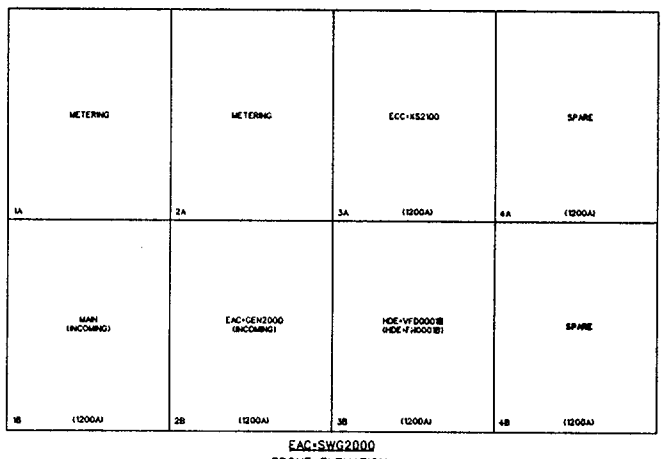
ONE	FFT	OF	TYPE	DISC	NUMBER	REV
DC501	EAC	DS	SCE	E	26005	B

< DESIGN REVIEW

e2600501.dgn

SIZE	DESCRIPTION	DESIGN REVIEW APPR/DATE	LEAD APPR/DATE	SIZE	DESCRIPTION	DESIGN REVIEW APPR/DATE	LEAD APPR/DATE	SIZE	DESCRIPTION	DESIGN REVIEW APPR/DATE	LEAD APPR/DATE	SIZE B (D-SIZE)	DESCRIPTION REV SYNC CKT/MISC DWG CHANGES ISSUED FOR FINAL DESIGN	DESIGN REVIEW APPR/DATE	LEAD APPR/DATE	SIZE A	DESCRIPTION ISSUED FOR FPD	DESIGN REVIEW APPR/DATE	LEAD APPR/DATE
DRAWN		PDM APPR/DATE	FPD APPR/DATE	DRAWN		PDM APPR/DATE	FPD APPR/DATE	DRAWN		PDM APPR/DATE	FPD APPR/DATE	DRAWN MDH		PDM APPR/DATE	FPD APPR/DATE	DRAWN RGH		PDM APPR/DATE	FPD APPR/DATE
CHECKED / REV ENG / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				CHECKED / REV ENG / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				CHECKED / REV ENG / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				CHECKED SJ-DS	REV ENG / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE			CHECKED 31-10-00	REV ENG. / REF. MORSON / REVIEWED N/A / REVIEWED N/A / REVIEWED N/A / COMPLIANCE N/A		
STRUCTURAL / MECHANICAL / ELECTRICAL		OTHER		STRUCTURAL / MECHANICAL / ELECTRICAL		OTHER		STRUCTURAL / MECHANICAL / ELECTRICAL		OTHER		STRUCTURAL / MECHANICAL / ELECTRICAL		OTHER		STRUCTURAL / MECHANICAL / ELECTRICAL		OTHER	
																N/A		N/A	

DATE: 09-OCT-2001 FILENAME: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx



EAC-SWG2000
FRONT ELEVATION

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
4.16KV EMERGENCY BUS B SWGR
EAC-SWG2000
ONE-LINE
DIAGRAM

DUKE ENGINEERING & SERVICES

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORG.	FCT.	OP.	TYPE	DISC.	NUMBER	REV.
DCS01	EAC	DS	SCE	E	28005	A

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	PDM APPR/DATE	FDM APPR/DATE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE
A	ISSUED FOR FPD	N/A	26-11-00	N/A	26-11-00	JAP 27-11-00	R.F. JACKSON	N/A	N/A	N/A	N/A

	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER
A				
B				
C				
D				
E				
F				
G				
H	N/A	N/A	N/A	N/A

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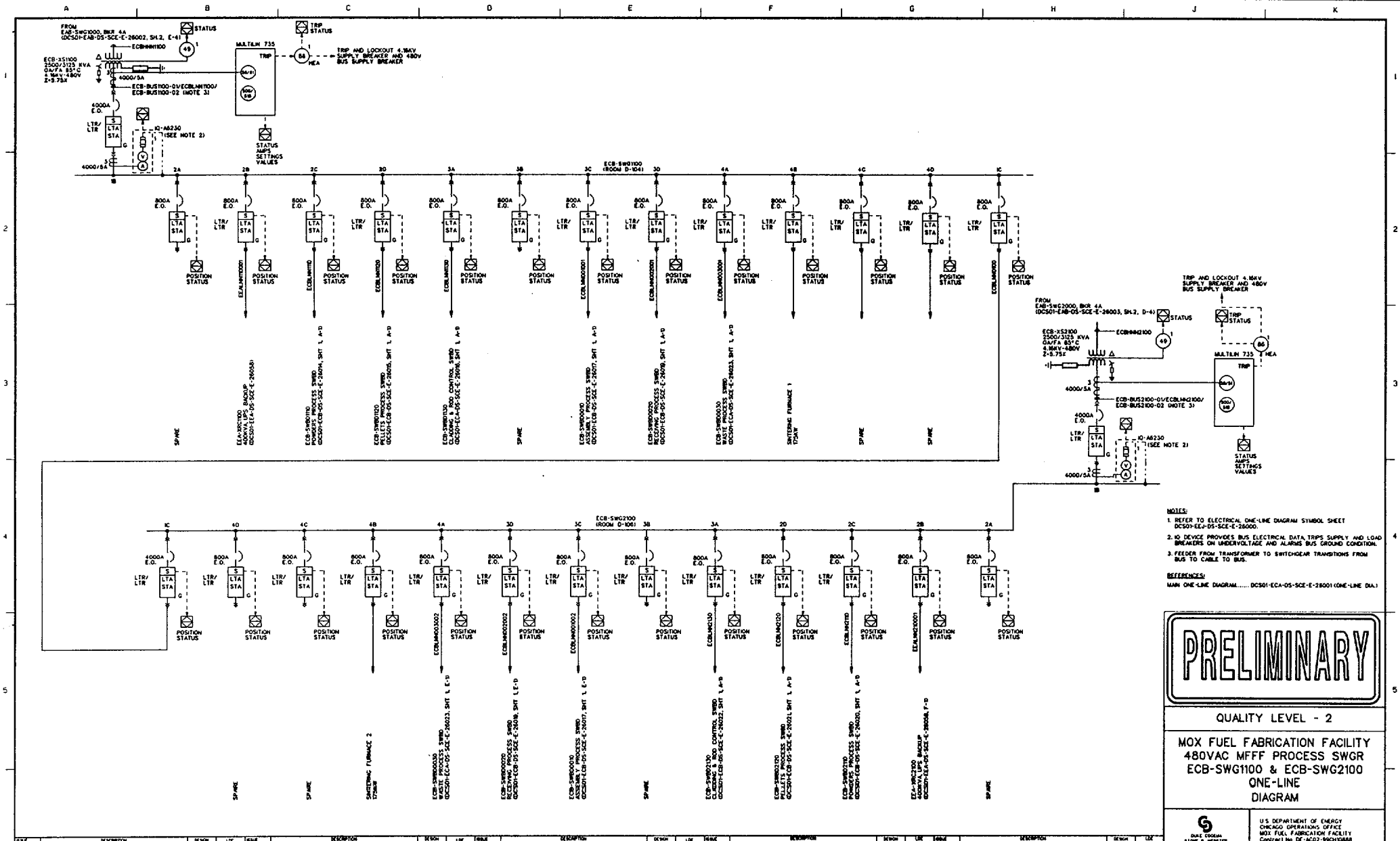
e2600503.dgn

DATE: 09-OCT-2001 FILENAME: ********************************



NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DCS01-EEJ-DS-SCE-E-26000.
2. IQ DEVICE PROVIDES BUS ELECTRICAL DATA, TRIPS SUPPLY AND LOAD BREAKERS ON UNDERVOLTAGE AND ALARMS BUS GROUND CONDITION.
3. FEEDER FROM TRANSFORMER TO SWITCHGEAR TRANSITIONS FROM BUS TO CABLE TO BUS.

REFERENCES:

MAIN ONE-LINE DIAGRAM..... DCS01-ECA-DS-SCE-E-26001 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
480VAC MFFF PROCESS SWGR
ECB-SWG1100 & ECB-SWG2100
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 2

ORG.	FCT.	OP.	TYP.	DSC.	NUMBER	REV.
DCS01	ECB	DS	SCE	E	26006	B

< DESIGN REVIEW

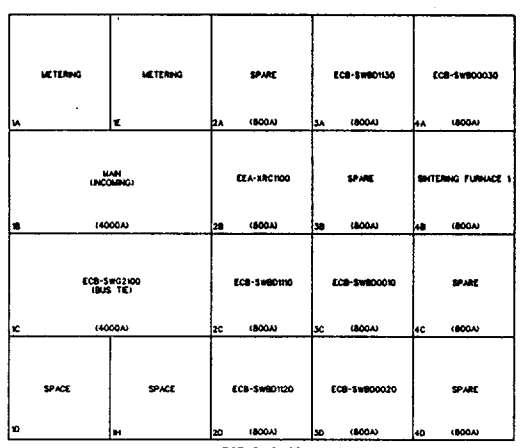
e2500601.dgn

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
B	REVISED EQ ID NO's & SINTERING FURNACE LOAD REDRAWN, REMOVED SECTION 5 ISSUED FOR FINAL DESIGN	N/A	26-11-00
A	ISSUED FOR FPD	N/A	26-11-00

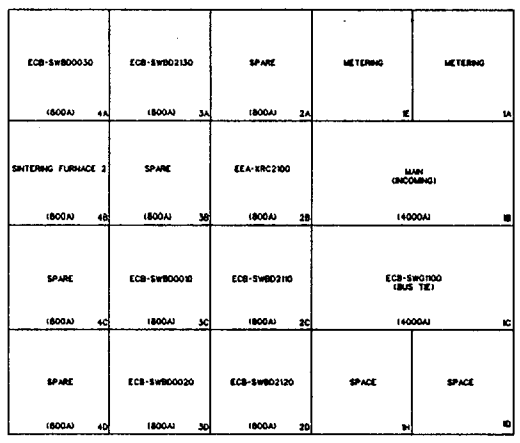
DRAWN	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE
MDH	27-11-00	R.F. JACKSON	N/A	N/A	N/A	N/A	N/A
RDH	26-11-00						

STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER
N/A	N/A	N/A	N/A

DATE: 08-OCT-2001 FILENAME: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX



ECB-SWG1100
FRONT ELEVATION



ECB-SWG2100
FRONT ELEVATION

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
480VAC MFFF PROCESS SWGR
ECB-SWG1100 & ECB-SWG2100
ONE-LINE
DIAGRAM

DUKE CORDEVA
STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORG.	FCT.	OF	TYPE	DISC.	NUMBER	REV.
DCS01	ECB	DS	SCE	E	26006	B

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
		PDH APPR/DATE	FDH APPR/DATE
B	REDRAWN, REMOVED SECTION & ISSUED FOR FINAL DESIGN	PDH APPR/DATE	FDH APPR/DATE
A	ISSUED FOR FPD	N/A	20-11-00
		PDH APPR/DATE	FDH APPR/DATE
		N/A	20-11-00

	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER
	N/A	N/A	N/A	N/A

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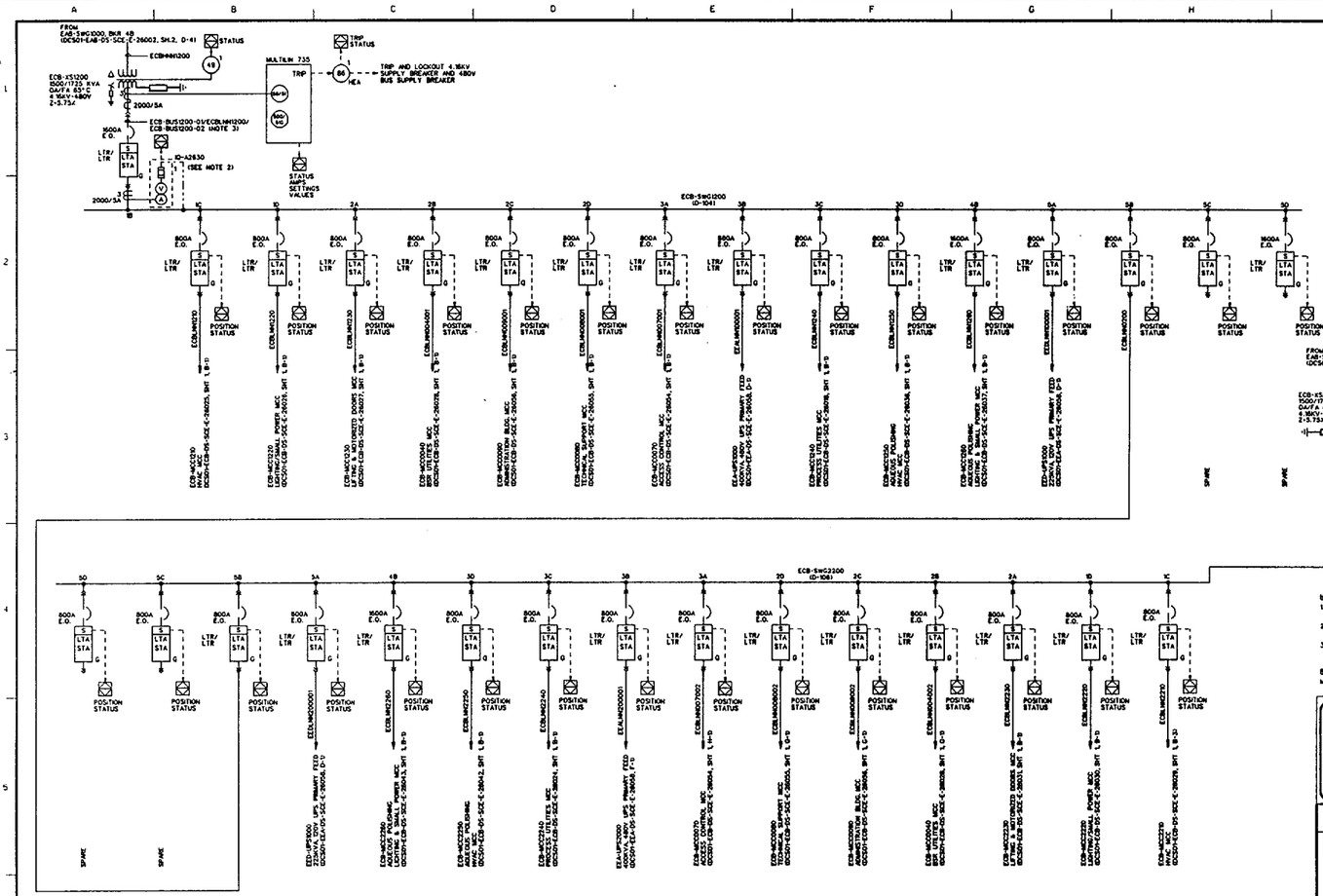
e26006b2 dgn

DATE: 09-OCT-2001 FILENAME: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX



NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-ECA-05-SCE-E-26000.
2. ID. DEVICE PROVIDES BUS ELECTRICAL DATA, TRIPS SUPPLY, AND LOAD BREAKERS ON UNDERVOLTAGE AND ALARMS BUS GROUND CONDITION.
3. FEEDER FROM TRANSFORMER TO SWITCHGEAR TRANSITIONS FROM BUS TO CABLE TO BUS.

REFERENCES:

MAIN ONE-LINE DIAGRAM..... DC501-ECA-05-SCE-E-26001 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
480VAC MFFF UTILITY SWGR
ECB-SWG1200 & ECB-SWG2200
ONE-LINE
DIAGRAM

DUKE ENGINEERING & SERVICES

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10988

REV	SCALE	SHEET
D	N/A	1 OF 2

DOC.	OF	OF	TYPE	SEQ.	SUBSEQ.	REV.
DC501	ECB	05	SCE	E	26007	B

DESIGN REVIEW	LIC APPLICABLE	SCALE	DESCRIPTION	DESIGN REVIEW	LIC APPLICABLE	SCALE	DESCRIPTION	DESIGN REVIEW	LIC APPLICABLE	SCALE	DESCRIPTION	DESIGN REVIEW	LIC APPLICABLE	SCALE	DESCRIPTION	DESIGN REVIEW	LIC APPLICABLE	SCALE	DESCRIPTION	DESIGN REVIEW	LIC APPLICABLE
		DRAWN				DRAWN				DRAWN				B DRAWN MEH	REDRAWN, ADDED SECTION 6 ISSUED FOR FINAL DESIGN			A DRAWN BBN	ISSUED FOR FPD	N/A	10-9-00
CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE			CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE			CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE			CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	CHECKED 02/26/01	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	CHECKED JP 11-9-00	RESP. ENG. R.F. JACOBSEN	N/A / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE			
STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	N/A	20-11-00
																N/A	N/A	N/A	N/A		

< DESIGN REVIEW

e2600701.dgn

DATE: 09-OCT-2001 FILENAME: ********************

METERING 1A	ECB-MCC1230 2A (800A)	ECB-MCC0070 3A (800A)	SPACE 4A	SPARE 5A
MAIN (INCOMING) 1B (1600A)	ECB-MCC0040 2B (800A)	EEA-UPS1000 3B (800A)	ECB-MCC1260 4B (800A)	BUS TIE 5B (1600A)
ECB-MCC1210 1C (800A)	ECB-MCC0090 2C (800A)	ECB-MCC1240 3C (800A)	SPACE 4C	SPARE 5C (800A)
ECB-MCC1220 1D (800A)	ECB-MCC0080 2D (800A)	ECB-MCC1250 3D (800A)	SPACE 4D	SPARE 5D (800A)

ECB-SWG1200
FRONT ELEVATION

SPARE 5A	SPACE 4A	ECB-MCC0070 (800A) 3A	ECB-MCC2230 (800A) 2A	SPACE 1A
BUS TIE (1600A) 5B	ECB-MCC2260 (800A) 4B	EEA-UPS2100 (800A) 3B	ECB-MCC0040 (800A) 2B	MAIN (INCOMING) (1600A) 1B
SPARE 5C	SPACE 4C	ECB-MCC2240 (800A) 3C	ECB-MCC0090 (800A) 2C	ECB-MCC2210 (800A) 1C
SPARE 5D	SPACE 4D	ECB-MCC2250 (800A) 3D	ECB-MCC0080 (800A) 2D	ECB-MCC2220 (800A) 1D

ECB-SWG2200
FRONT ELEVATION

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
DRAWN		PGH APPR/DATE	FDM APPR/DATE	DRAWN		PGH APPR/DATE	FDM APPR/DATE	DRAWN		PGH APPR/DATE	FDM APPR/DATE
CHECKED	RESP. ENG. REVIEWED REVIEWED REVIEWED COMPLIANCE			CHECKED	RESP. ENG. REVIEWED REVIEWED REVIEWED COMPLIANCE			CHECKED	RESP. ENG. REVIEWED REVIEWED REVIEWED COMPLIANCE		
STRUCTURAL	MECHANICAL ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL ELECTRICAL	OTHER	

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
B	REDRAWN, ADDED SECTION 5 ISSUED FOR FINAL DESIGN			A	ISSUED FOR FPD					N/A	G.A.BELL 28-11-00
DRAWN MGH		PGH APPR/DATE	FDM APPR/DATE	DRAWN RGH		PGH APPR/DATE	FDM APPR/DATE			PGH APPR/DATE N/A	FDM APPR/DATE RAB 28-11-00
CHECKED	RESP. ENG. REVIEWED REVIEWED REVIEWED COMPLIANCE			CHECKED 27-11-00	RESP. ENG. REVIEWED REVIEWED REVIEWED COMPLIANCE						
STRUCTURAL	MECHANICAL ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL ELECTRICAL	OTHER		STRUCTURAL	MECHANICAL ELECTRICAL	OTHER	
				R.F. JACKSON	N/A N/A N/A N/A			N/A	N/A N/A	N/A	

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
480VAC MFFF UTILITY SWGR
ECB-SWG1200 & ECB-SWG2200
ONE-LINE
DIAGRAM

BECHTEL CORPORATION
STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

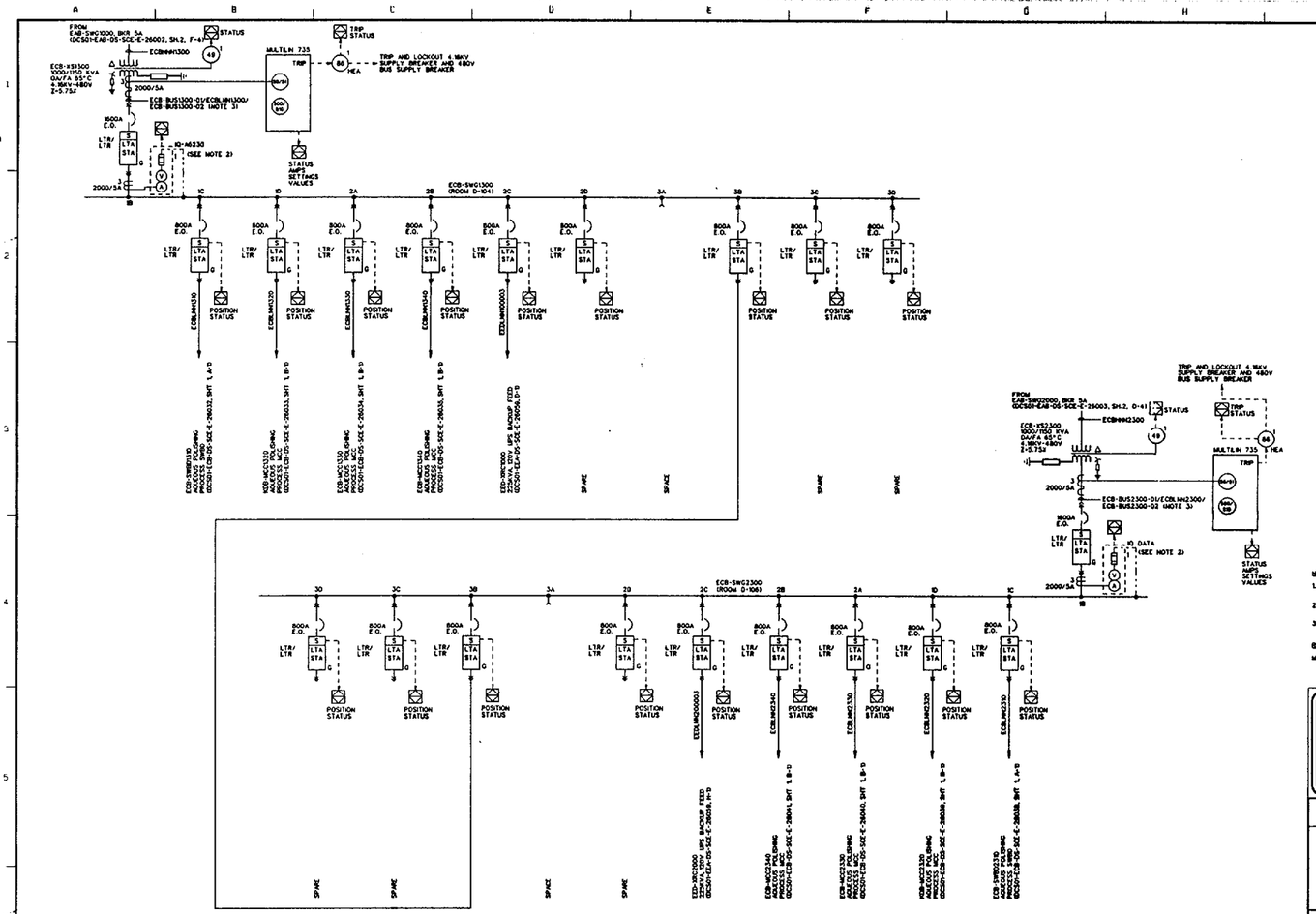
SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORG.	FCT	GP.	TYPE	SEQ.	NUMBER	REV.
DCS01	ECB	05	SCE	E	26007	B

< DESIGN REVIEW

e2600702.dgn

DATE: 09-OCT-2001 FILENAME: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX



NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-EE-J-05-SCE-E-26000.
2. ID DEVICE PROVIDES BUS ELECTRICAL DATA, TRIPS SUPPLY AND LOAD BREAKERS ON UNDERVOLTAGE AND ALARMS BUS GROUND CONDITION.
3. FEEDER FROM TRANSFORMER TO SWITCHGEAR TRANSITIONS FROM BUS TO CABLE TO BUS.

REFERENCES:

MAIN ONE-LINE DIAGRAM ..... DC501-ECA-05-SCE-E-26001(ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
480VAC AP PROC & FAC SWGR
ECB-SWG1300 & ECB-SWG2300
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 2

SYS	FCI	DP	SYM	DWG	NUMBER	REV
DC501	ECB	05	SCE	E	26008	0

(DESIGN REVIEW)

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48LE	DESCRIPTION	DESIGN VERIFIER APPROVAL	LEC APPROVALS	48LE	DESCRIPTION	DESIGN VERIFIER APPROVAL	LEC APPROVALS	48LE	DESCRIPTION	DESIGN VERIFIER APPROVAL	LEC APPROVALS	48LE	DESCRIPTION	DESIGN VERIFIER APPROVAL	LEC APPROVALS	48LE	DESCRIPTION	DESIGN VERIFIER APPROVAL	LEC APPROVALS	48LE	DESCRIPTION	DESIGN VERIFIER APPROVAL	LEC APPROVALS
DRAWN				DRAWN				DRAWN				DRAWN				B	REDRAWN, REVISED SECTION 4 ISSUED FOR FINAL DESIGN			A	ISSUED FOR FPD		
CHECKED	REP. DIS. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPROVALS	FOH APPROVALS	CHECKED	REP. DIS. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPROVALS	FOH APPROVALS	CHECKED	REP. DIS. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPROVALS	FOH APPROVALS	CHECKED	REP. DIS. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPROVALS	FOH APPROVALS	CHECKED	REP. DIS. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPROVALS	FOH APPROVALS	CHECKED	REP. DIS. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE	FOH APPROVALS	FOH APPROVALS
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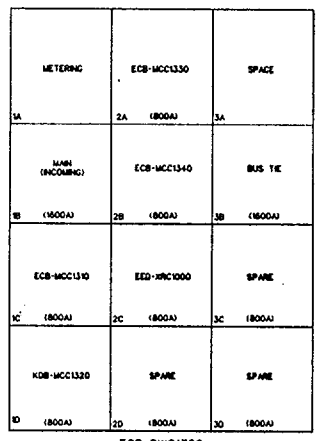
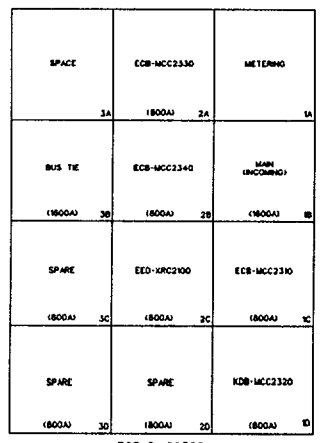


ECB-SWG1300
FRONT ELEVATION



ECB-SWG2300
FRONT ELEVATION

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
480VAC AP PROC & FAC SWGR
ECB-SWG1300 & ECB-SWG2300
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORG.	FCI	DP	TYPE	DISC.	NUMBER	REV.
DCS01	ECB	DS	SCE	E	25008	B

< DESIGN REVIEW

e2600802.dgn

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CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
		PDM APPR/DATE	FDM APPR/DATE
DRAWN			
CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
		PDM APPR/DATE	FDM APPR/DATE
DRAWN			
CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
B	REDRAWN, REMOVED SECTION 4 ISSUED FOR FINAL DESIGN	PDM APPR/DATE	FDM APPR/DATE
DRAWN MDH			
CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
A	ISSUED FOR FPD	PDM APPR/DATE	FDM APPR/DATE
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CHECKED AHP 27-9-00	RESP. ENG. R.F. JACKSON / REVIEWED N/A / REVIEWED N/A / REVIEWED N/A / COMPLIANCE N/A		
STRUCTURAL N/A	MECHANICAL N/A	ELECTRICAL N/A	OTHER N/A

DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
N/A	G.A.BELL 28-9-00
PDM APPR/DATE N/B	FDM APPR/DATE AHP 28-9-00

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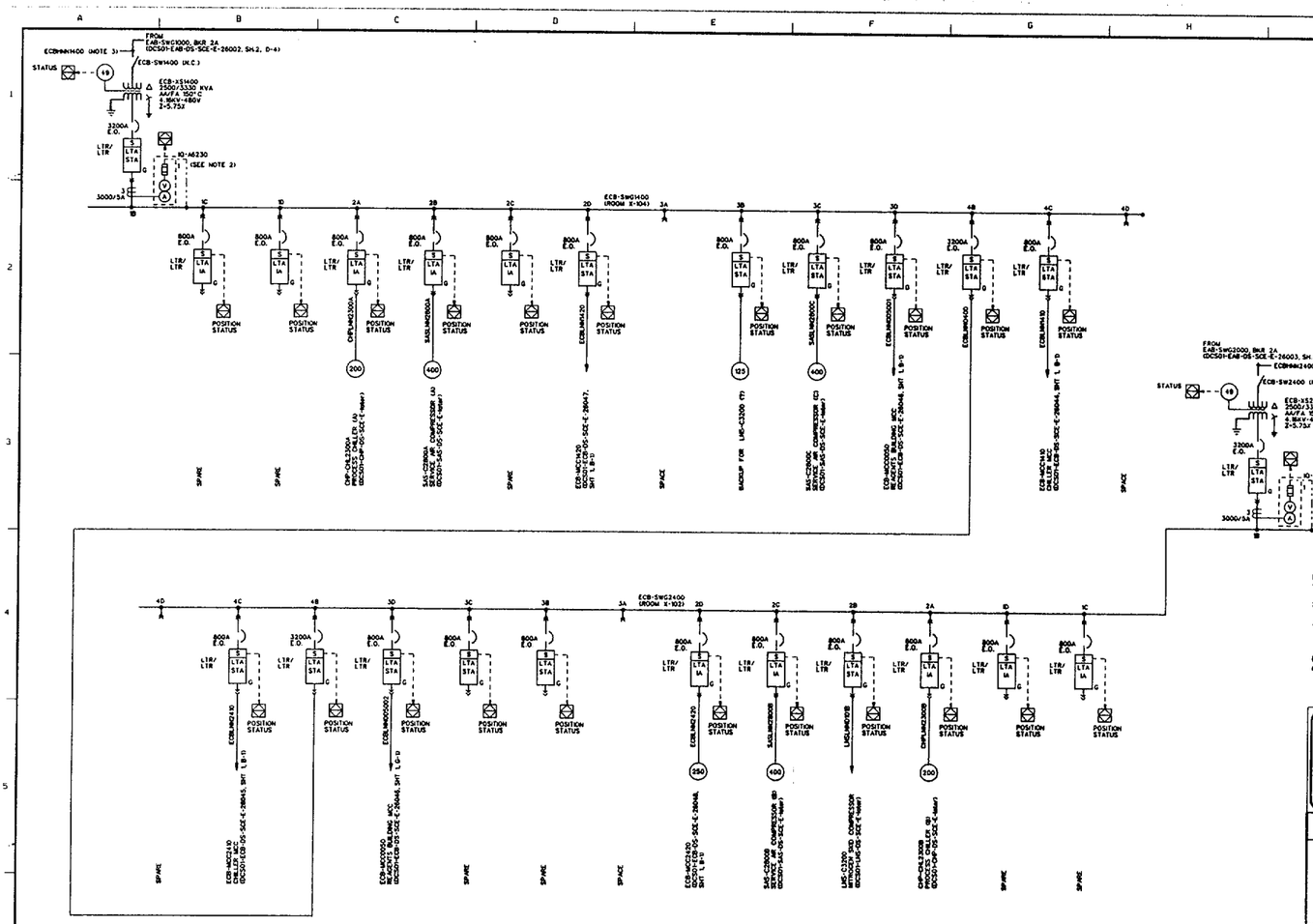

NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DCS01-EE-05-SCE-E-26000.
2. IQ DEVICE PROVIDES BUS ELECTRICAL DATA, TRIPS SUPPLY AND LOAD BREAKERS ON UNDERVOLTAGE AND ALARMS BUS GROUND CONDITION.
3. CABLE TERMINATES TO DISCONNECT SWITCH THAT IS CLOSE COUPLED TO THE TRANSFORMER.

REFERENCES:

MAIN ONE-LINE DIAGRAM..... DCS01-ECA-05-SCE-E-26001 (ONE-LINE DIA.)

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
480VAC CHILLER BUS 1 & 2 SWGR
ECB-SWG1400 & ECB-SWG2400
ONE-LINE
DIAGRAM

DUKE ENGINEERING & CONSTRUCTORS

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 2

ORIG.	FIT	OF	TYPE	SOURCE	NUMBER	REV.
DCS01	ECB	05	SCE	E	26009	B

	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LIC APPR/DATE	ISSUE	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LIC APPR/DATE	ISSUE	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LIC APPR/DATE	ISSUE	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LIC APPR/DATE	ISSUE	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LIC APPR/DATE
						PDH APPR/DATE	FDH APPR/DATE	DRAWN						PDH APPR/DATE	FDH APPR/DATE	DRAWN						PDH APPR/DATE	FDH APPR/DATE	DRAWN						PDH APPR/DATE	FDH APPR/DATE	DRAWN						PDH APPR/DATE	FDH APPR/DATE
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ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LIC APPR/DATE
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DRAWN	MDH		
CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE		
STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER	

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LIC APPR/DATE
A	ISSUED FOR FPD		
DRAWN	RDH		
CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE		
STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER	

DESIGN VERIFIED APPR/DATE	LIC APPR/DATE
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PDH APPR/DATE	FDH APPR/DATE
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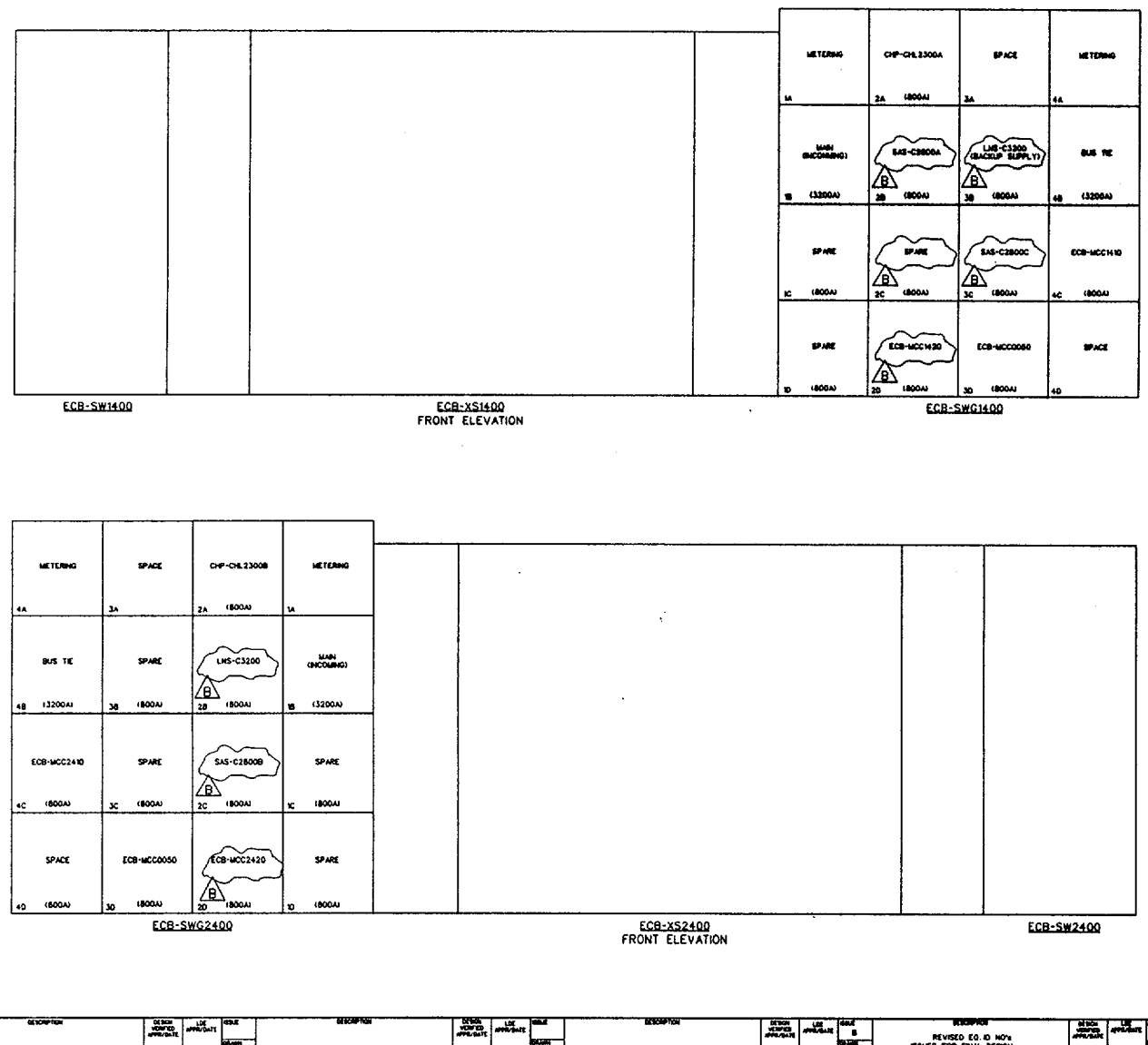

PRELIMINARY

QUALITY LEVEL - 2

MOX FUEL FABRICATION FACILITY
480VAC CHILLER BUS 1 & 2 SWGR
ECB-SWG1400 & ECB-SWG2400
ONE-LINE
DIAGRAM

DUKE ENGINEERING & SERVICES
STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORG.	FCI	OF	TYPE	SEC.	NUMBER	REV.
DCS01	ECB	05	SCE	E	26009	B

< DESIGN REVIEW

e2600902.dgn

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	CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
	STRUCTURAL / MECHANICAL / ELECTRICAL	OTHER	

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
		PDM APPR/DATE	FDM APPR/DATE
	CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
	STRUCTURAL / MECHANICAL / ELECTRICAL	OTHER	

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
		PDM APPR/DATE	FDM APPR/DATE
	CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
	STRUCTURAL / MECHANICAL / ELECTRICAL	OTHER	

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
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MDH	CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE		
	STRUCTURAL / MECHANICAL / ELECTRICAL	OTHER	

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
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MDH	CHECKED MP 27-9-00 / RESP. ENG. R.F. JACKSON / REVIEWED N/A / REVIEWED N/A / REVIEWED N/A / COMPLIANCE N/A	PDM APPR/DATE N/A	FDM APPR/DATE RMB 30-11-00
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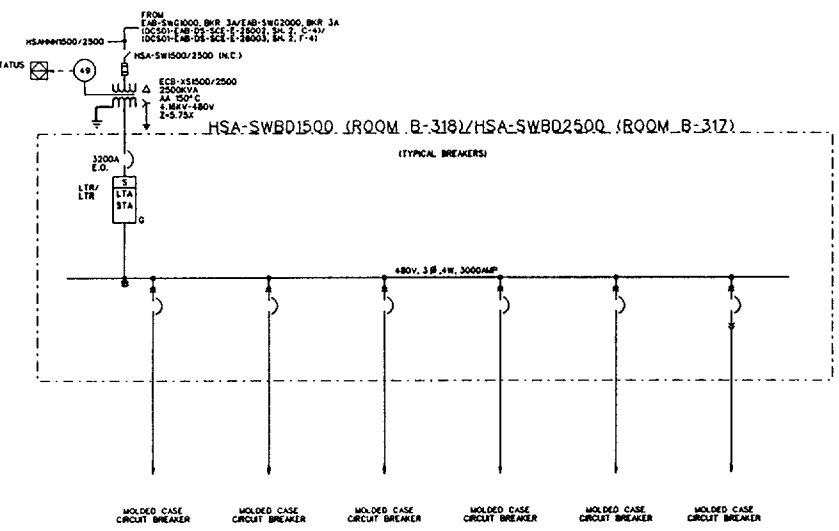

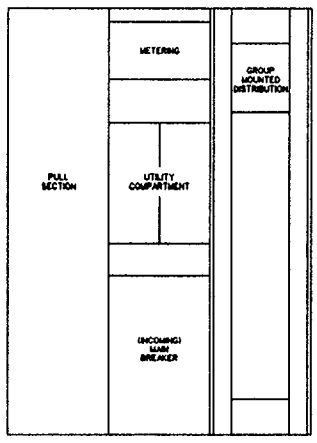

HSA-SWBD1500/2500
FRONT ELEVATION TYP

NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DCS01-EEJ-DS-SCE-E-26000.
2. CABLE TERMINATES TO DISCONNECT SWITCH THAT IS CLOSE COUPLED TO THE TRANSFORMER.

REFERENCES:

MAIN ONE-LINE DIAGRAM..... DCS01-ECA-DS-SCE-E-26001 (ONE-LINE DIA.)

480V HSA-SWDB1500 CHART

BREAKER NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	DESCRIPTION
01	HSA-PHL0001	HSALHN000101	600A			HSA-PHL0001 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26615
02	HSA-PHL0001	HSALHN000102	600A			HSA-PHL0002 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26615
03	HSA-PHL0003	HSALHN000301	600A			HSA-PHL0003 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26617
04	HSA-PHL0003	HSALHN000302	600A			HSA-PHL0004 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26617
05	HSA-PHL0005	HSALHN000501	600A			HSA-PHL0005 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26619
06	HSA-PHL0005	HSALHN000502	600A			HSA-PHL0006 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26619

480V HSA-SWDB2500 CHART

BREAKER NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	DESCRIPTION
01	HSA-PHL0002	HSALHN000201	600A			HSA-PHL0001 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26616
02	HSA-PHL0002	HSALHN000202	600A			HSA-PHL0002 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26616
03	HSA-PHL0004	HSALHN000401	600A			HSA-PHL0003 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26618
04	HSA-PHL0004	HSALHN000402	600A			HSA-PHL0004 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26618
05	HSA-PHL0006	HSALHN000601	600A			HSA-PHL0005 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26620
06	HSA-PHL0006	HSALHN000602	600A			HSA-PHL0006 AIR HEATER SUPPLY AIR CONTROL PANEL DRAWING 26620

PRELIMINARY

QUALITY LEVEL - 3

MOX FUEL FABRICATION FACILITY
480VAC SUPPLY AIR HEATER
SWITCHBOARDS
HSA-SWBD1500 & HSA-SWBD2500
ONE-LINE DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 1

ORIG.	FCT.	OP.	TYPE	DISC.	NUMBER	REV.
DCS01	ECB	DS	SCE	E	26010	B

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
B	REDRAWN ISSUED FOR FINAL DESIGN	RGH 12-8-00	RGH 28-9-00
A	ISSUED FOR FPD	NA	C. BELL 28-9-00 / RGH 28-9-00

STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

DESIGN REVIEW

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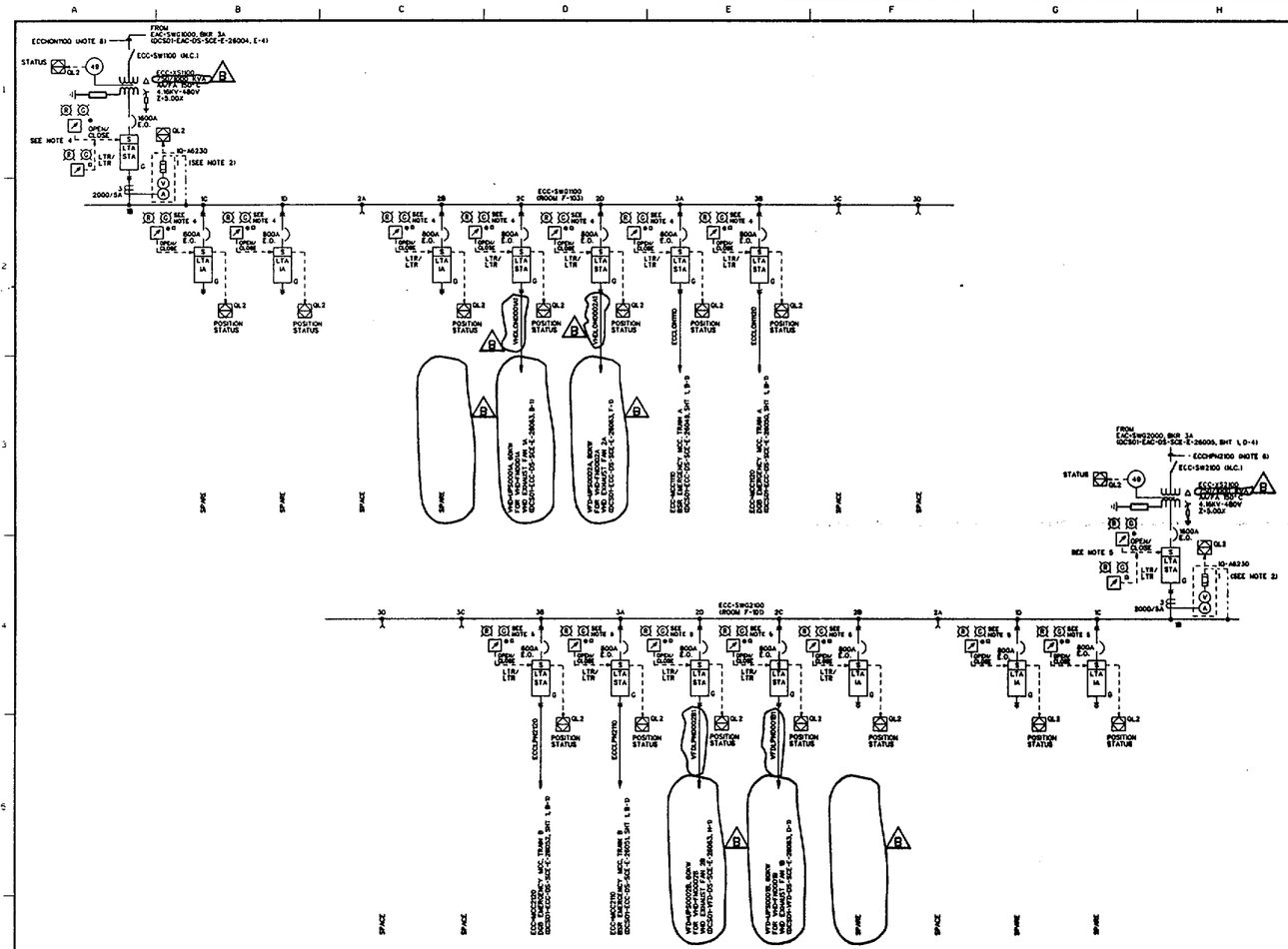

NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DCS01-ECJ-DS-SCE-E-26000.
2. (I) DEVICE PROVIDES BUS ELECTRICAL DATA, TRIPS SUPPLY AND LOAD BREAKERS ON UNDERVOLTAGE AND ALARMS BUS GROUND CONDITION.
3. ALL EQUIPMENT SHOWN ON THIS DRAWING IS QUALITY LEVEL 1 UNLESS OTHERWISE NOTED.
4. BREAKER OPEN AND CLOSE SWITCHES LOCATED IN SWITCHGEAR AND EMERGENCY TRAIN A CONTROL ROOM.
5. BREAKER OPEN AND CLOSE SWITCHES LOCATED IN SWITCHGEAR AND EMERGENCY TRAIN B CONTROL ROOM.
6. CABLE IS TERMINATED AT DISCONNECT SWITCH THAT IS CLOSE COUPLED TO THE TRANSFORMER.

REFERENCES:

MAIN ONE-LINE DIAGRAM..... DCS01-ECA-DS-SCE-E-26001 (ONE-LINE DIA.)

LEGEND:

- DEVICE LOCATED @ CONTROL PANELS EAC-PNL1000 & 2000 IN EMERGENCY TRAIN A OR B CONTROL ROOM.
- DEVICE LOCATED @ SWITCHGEAR.

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG BUS A & B SWGR
ECC-SWG1100 & ECC-SWG2100
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 2

ORG.	TYP.	SP.	TYPE	SEC.	NUMBER	REV.
DCS01	ECC	DS	SCE	E	26011	B

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SIZE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEC APPR/DATE	SIZE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEC APPR/DATE	SIZE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEC APPR/DATE	SIZE B	DESCRIPTION: REMOVED POE FANS/REVISED EQ ID REVISED CABLE ID/REVISED XFMR SIZES ISSUED FOR FINAL DESIGN	DESIGN VERIFIED APPR/DATE	LEC APPR/DATE	SIZE A	DESCRIPTION: ISSUED FOR FPD	DESIGN VERIFIED APPR/DATE	LEC APPR/DATE
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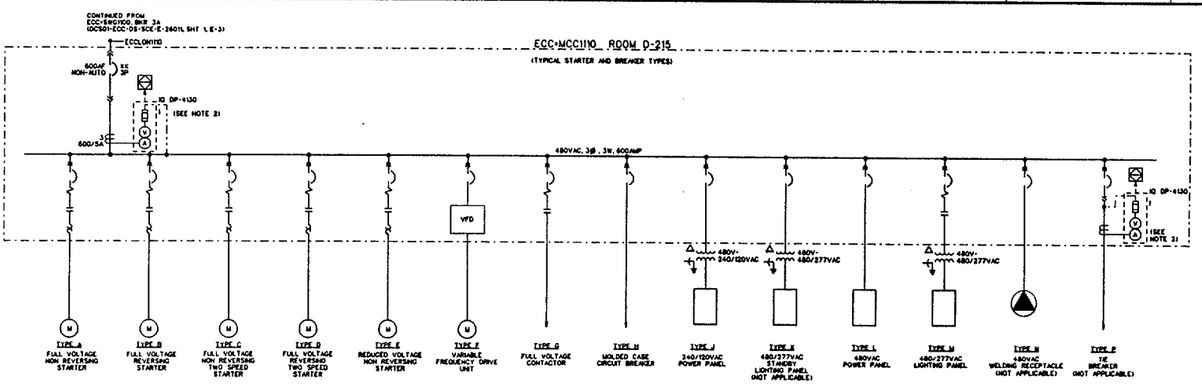
CHECKED	RESP. DISC. / REVIEWED / REVIEWED / REVIEWED / COORDINATE			CHECKED	RESP. DISC. / REVIEWED / REVIEWED / REVIEWED / COORDINATE			CHECKED	RESP. DISC. / REVIEWED / REVIEWED / REVIEWED / COORDINATE			CHECKED	RESP. DISC. / REVIEWED / REVIEWED / REVIEWED / COORDINATE			CHECKED RF-1-96	RESP. DISC. / REVIEWED / REVIEWED / REVIEWED / COORDINATE		
	STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER				STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER				STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER				STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER				STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER		
																	N/A / N/A / N/A / N/A		

DATE: 29-OCT-2001 FILENAME: ********************************



NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-EE-DS-SCE-E-26000.
2. 10 DEVICE PROVIDES BUS ELECTRICAL DATA AND ALARMS BUS GROUND CONDITION.
3. FOR FRONT ELEVATION & ADDITIONAL LOADS, REFER TO NEXT SHEET.

480 VOLT MOTOR CONTROL CENTER CHART

CUBICLE NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	STARTER OR BREAKER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	LOAD/ H.P.	OVERLOAD TYPE	OVERLOAD SETTING	CONTROL TRANSFORMER SIZE	FUSE SIZE	SCHEMATIC DIAGRAM	CONNECTION DIAGRAM	DESCRIPTION	REMARKS
		ECCLON1110												MCC#1110	
	EBB-C*BGF1110	EBBLON111001	TYPE H				80KVA						DC501-EBB-DS-SCE-E-26081	125VDC EMERGENCY TRAIN A BATTERY CHARGER (VITAL)	
	EPH*XS1110	EPHLON111201	TYPE J				5KVA						N/A	240/120VAC EMERGENCY TRAIN A POWER DISTRIBUTION TRANSFORMER	
	EPH*PHL1112	EPHLON111202	N/A										DC501-EPH-DS-SCE-E-26087	240/120VAC EMERGENCY TRAIN A POWER DISTRIBUTION PANEL	
N/A	EPC-*XS1111	EPCLON111101	TYPE M				15KVA						N/A	480/277VAC EMERGENCY TRAIN A LIGHTING TRANSFORMER	
	EPC-PHL1111	EPCLON111102	N/A										DC501-EPC-DS-SCE-E-26075	480/277VAC EMERGENCY TRAIN A LIGHTING PANEL	
N/A	later	later	TYPE A				10HP							EMERGENCY CONTROL ROOM OUTSIDE AIR SUPPLY FAN	
	later	later	TYPE A				10HP							EMERGENCY CONTROL ROOM RECIRCULATION SYSTEM AIR SUPPLY FAN	
	later	later	TYPE H				10HP							EMERGENCY CONTROL ROOM AIR HANDLING UNIT	

LEGEND: (REFER TO REMARKS COLUMN)

BC -BRAKE CONTACTOR
PEP -PERSONAL/EQUIPMENT PROTECTION RELAY
SFTY -SAFETY RELAY
CS -CONTROL SWITCH AT CUBICLE DOOR. (REFER TO SCHEMATICS FOR TYPE)

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG TRAIN A MCC
ECC*MCC1110
ONE-LINE
DIAGRAM

BECHTEL CORPORATION
STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

WBS		PFX		SYS		SEQ		SUFFIX	REV
DC501	ECC	DS	SCE	E	26049			A	

© DESIGN REVIEW

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DESIGN PHASE	DESCRIPTION					DESIGN PHASE	DESCRIPTION					DESIGN PHASE	DESCRIPTION					DESIGN PHASE	DESCRIPTION					DESIGN PHASE	DESCRIPTION				
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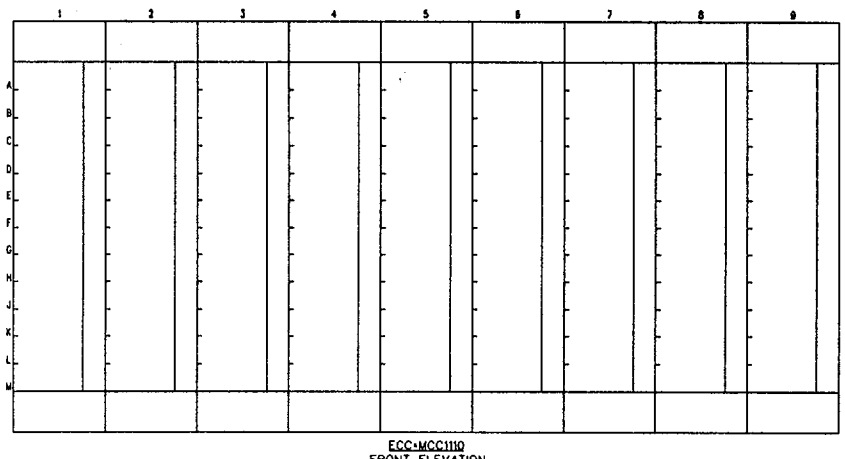
DATE: 09-OCT-2001 FILENAME: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX



ECC-MCC1110
FRONT ELEVATION

480 VOLT MOTOR CONTROL CENTER CHART (CONTINUED)

CUBICLE NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	STARTER OR BREAKER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	LOAD/ H.P.	OVERLOAD TYPE	OVERLOAD SETTING	CONTROL TRANSFORMER SIZE	FUSE SIZE	SCHEMATIC DIAGRAM	CONNECTION DIAGRAM	DESCRIPTION	REMARKS

NOTES:
1. FOR TYPICAL STARTER AND BREAKER TYPES SEE SHEET 1.

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE
DRAWN		PDM APPR/DATE	PDM APPR/DATE	DRAWN		PDM APPR/DATE	PDM APPR/DATE	DRAWN		PDM APPR/DATE	PDM APPR/DATE	DRAWN		PDM APPR/DATE	PDM APPR/DATE	DRAWN		PDM APPR/DATE	PDM APPR/DATE	DRAWN		PDM APPR/DATE	PDM APPR/DATE
CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE
STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER				

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG TRAIN A MCC
ECC-MCC1110
ONE-LINE
DIAGRAM

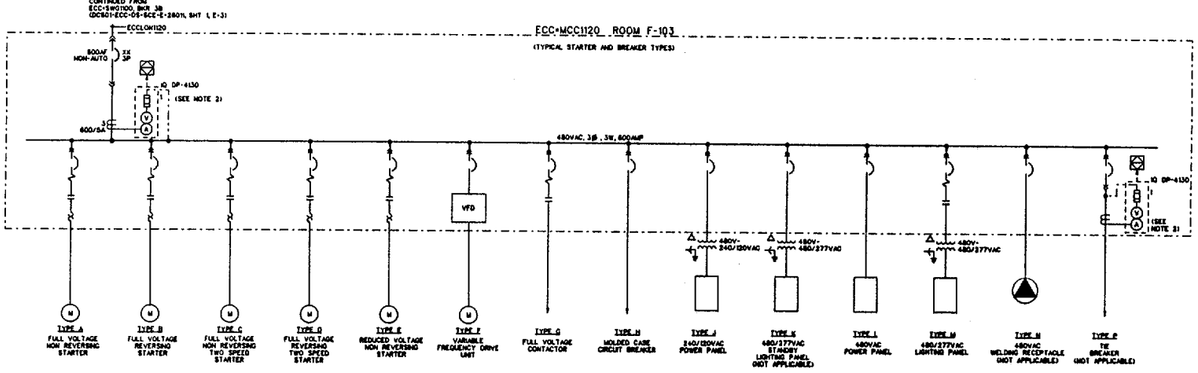
DUKE CROGAN STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORG.	FCY.	OF	TYPE	DISC.	SEQUENCE	REV.
DC501	ECC	DS	SCE	E	28049	A

1 DESIGN REVIEW



NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-ECJ-05-SCE-E-26000.
2. ID DEVICE PROVIDES BUS ELECTRICAL DATA AND ALARMS BUS GROUND CONDITION.
3. FOR FRONT ELEVATION & ADDITIONAL LOADS, REFER TO NEXT SHEET.

480 VOLT MOTOR CONTROL CENTER CHART

CUBICLE NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	STARTER OR BREAKER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	LOAD/ H.P.	OVERLOAD TYPE	OVERLOAD SETTING	CONTROL TRANSFORMER SIZE	FUSE SIZE	SCHEMATIC DIAGRAM	CONNECTION DIAGRAM	DESCRIPTION	REMARKS
		ECCLOM1120												INCOMING	
	SPARE														
	EBB-XRC1110	EBBLOM1110D4/OB	TYPE H				50KVA						DC501-EBB-05-SCE-E-26063	120VAC EMERGENCY TRAIN A U.P.S TRANSFORMER (VITAL) ALTERNATE FEED	
	EPH-XS1121	EPHLOM1121201	TYPE J				5KVA						N/A	240/120VAC EMERGENCY TRAIN A POWER DISTRIBUTION TRANSFORMER	
N/A	EPH-PNL1122	EPHLOM1121202	N/A										DC501-EPH-05-SCE-E-26067	240/120VAC EMERGENCY TRAIN A POWER DISTRIBUTION PANEL	
	EPC-XS1121	EPCLOM1121201	TYPE M				15KVA						N/A	480/277VAC EMERGENCY TRAIN A LIGHTING TRANSFORMER	
N/A	EPC-PNL1121	EPCLOM1121202	N/A										DC501-EPC-05-SCE-E-26075	480/277VAC EMERGENCY TRAIN A LIGHTING PANEL	
	solar	solar	TYPE A				25KW							HVAC UNIT WITH CONTROLS	
	solar	solar	TYPE A				5HP							ROOF EXHAUST FAN	
	BEG-HTR01004F	BEGLOM1004F	TYPE A				5HP							DIESEL ROOM HEATER	
	ECC-BAT1001	ECCLOM1001	TYPE N											DIESEL GENERATOR BATTERY CHARGER 1	
	ECC-BAT1002	ECCLOM1002	TYPE N											DIESEL GENERATOR BATTERY CHARGER 2	
	EGF-P2502A	EGFLOM2502A	TYPE A				2HP					DC501-EGF-05-SCE-E-29160	DC501-EGF-05-SCE-E-29160	FUEL OIL TRANSFER PUMP	
	EGF-HTR1001	EGFLOM1001	TYPE A				6KW							JACKET WATER HEATER	

LEGEND: (REFER TO REMARKS COLUMN)

BC -BRAKE CONTACTOR
PEP -PERSONAL/EQUIPMENT PROTECTION RELAY
SFTY -SAFETY RELAY
CS -CONTROL SWITCH AT CUBICLE DOOR. (REFER TO SCHEMATICS FOR TYPE)

PRELIMINARY

QUALITY LEVEL = 1 (NOFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG TRAIN A MCC
ECC=MCC1120
ONE-LINE
DIAGRAM

DUKE ENGINEERING & SERVICES

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

REV.	SCALE	SHEET
D	N/A	1 OF 2

SYS.	FCY.	DP	TYPE	DISC.	NUMBER	REV.
DC501	ECC	05	SCE	E	26050	A

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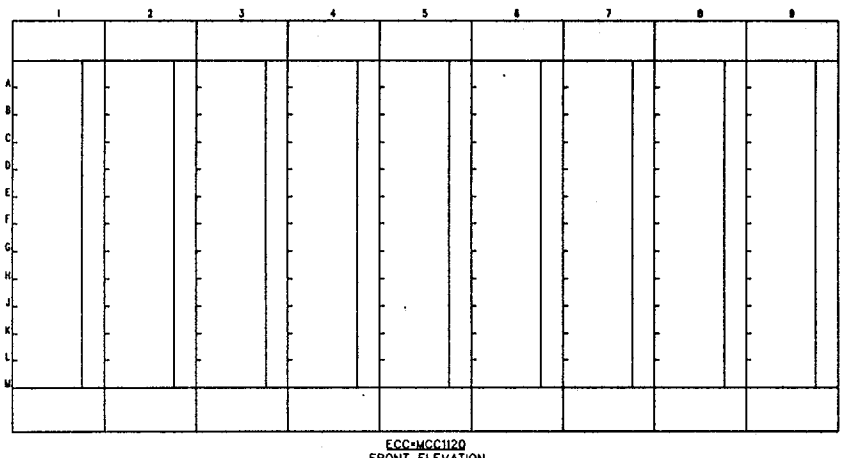
e2605001.dgn

| DESIGN VERIFIED APPR/DATE | LIB APPR/DATE | ISSUE | DESCRIPTION | | | | | | | | | | | | | |



ECC-MCC1120
FRONT ELEVATION

480 VOLT MOTOR CONTROL CENTER CHART (CONTINUED)

CUBICLE NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	STARTER OR BREAKER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	LOAD/ H.P.	OVERLOAD TYPE	OVERLOAD SETTING	CONTROL TRANSFORMER SIZE	FUSE SIZE	SCHEMATIC DIAGRAM	CONNECTION DIAGRAM	DESCRIPTION	REMARKS

NOTES:
1. FOR TYPICAL STARTER AND BREAKER TYPES SEE SHEET 1.

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG TRAIN A MCC
ECC-MCC1120
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORIG.	FET. OF	TYPE	DISC.	NUMBER	REV.
DCS01	ECB	DS	SCE	E	26050	A

< DESIGN REVIEW

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDC APPR/DATE	PDU APPR/DATE	FDM APPR/DATE
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CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				
STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER					

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDC APPR/DATE	PDU APPR/DATE	FDM APPR/DATE
DRAWN					
CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				
STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER					

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDC APPR/DATE	PDU APPR/DATE	FDM APPR/DATE
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CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				
STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER					

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDC APPR/DATE	PDU APPR/DATE	FDM APPR/DATE
DRAWN					
CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				
STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER					

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDC APPR/DATE	PDU APPR/DATE	FDM APPR/DATE
DRAWN					
CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				
STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER					

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDC APPR/DATE	PDU APPR/DATE	FDM APPR/DATE
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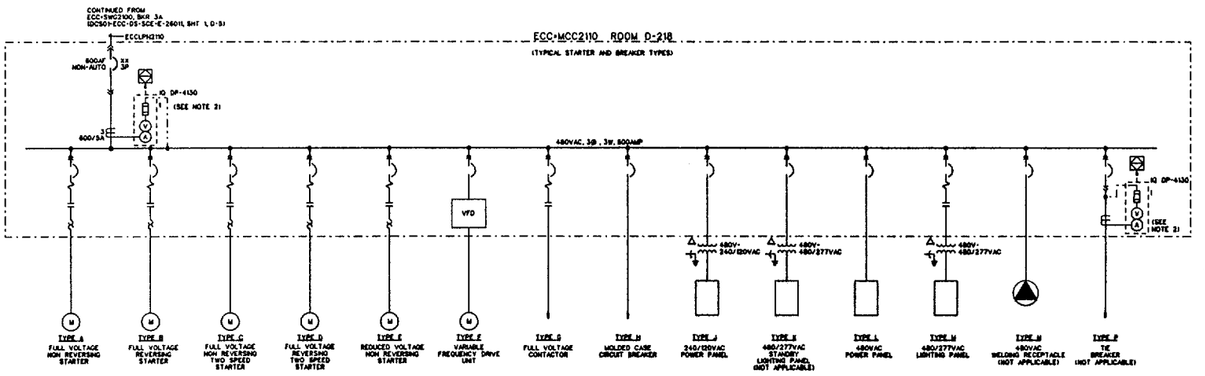
CHECKED	RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				
STRUCTURAL / MECHANICAL / ELECTRICAL / OTHER					



NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-EE2-05-SCE-E-26000.
2. X2 DEVICE PROVIDES BUS ELECTRICAL DATA AND ALARMS BUS GROUND CONDITION.
3. FOR FRONT ELEVATION & ADDITIONAL LOADS, REFER TO NEXT SHEET.

LEGEND: (REFER TO REMARKS COLUMN)

BC -BRAKE CONTACTOR
PCP -PERSONAL/EQUIPMENT PROTECTION RELAY
SFTY -SAFETY RELAY
CS -CONTROL SWITCH AT CUBICLE DOOR. (REFER TO SCHEMATICS FOR TYPE)

480 VOLT MOTOR CONTROL CENTER CHART

CUBICLE NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	STARTER OR BREAKER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	LOAD/ H.P.	OVERLOAD TYPE	OVERLOAD SETTING	CONTROL TRANSFORMER SIZE	FUSE SIZE	SCHEMATIC DIAGRAM	CONNECTION DIAGRAM	DESCRIPTION	REMARKS
		ECCLPN2110												INCOMING	
	EBB-CHGR2110	EBBLPN2110D1	TYPE H				50KVA						DC501-EBB-05-SCE-E-26061	125VDC EMERGENCY TRAIN B BATTERY CHARGER (VITAL)	
	EPH-XS2112	EPHLPN2112D1	TYPE J				9kVA						N/A	240/120VAC EMERGENCY TRAIN B POWER DISTRIBUTION TRANSFORMER	
N/A	EPH-PNL2112	EPHLPN2112D2	N/A										DC501-EPH-05-SCE-E-26067	240/120VAC EMERGENCY TRAIN B POWER DISTRIBUTION PANEL	
	EPC-XS2111	EPCLPN2112D1	TYPE M				15KVA						N/A	480/277VAC EMERGENCY TRAIN B LIGHTING TRANSFORMER	
N/A	EPC-PNL2111	EPCLPN2112D2	N/A										DC501-EPC-05-SCE-E-26075	480/277VAC EMERGENCY TRAIN B LIGHTING PANEL	
	Motor	Motor	TYPE A				10HP							EMERGENCY CONTROL ROOM OUTSIDE AIR SUPPLY FAN	
	Motor	Motor	TYPE A				10HP							EMERGENCY CONTROL ROOM RECIRCULATION SYSTEM AIR SUPPLY FAN	
	Motor	Motor	TYPE H				10HP							EMERGENCY CONTROL ROOM AIR HANDLING UNIT	

SIZE / DRAWN	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	SIZE / DRAWN	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	SIZE / DRAWN	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	SIZE / DRAWN	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE	SIZE / DRAWN	DESCRIPTION					DESIGN VERIFIED APPR/DATE	LEAD APPR/DATE
CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PROJ APPR/DATE	PCM APPR/DATE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PROJ APPR/DATE	PCM APPR/DATE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PROJ APPR/DATE	PCM APPR/DATE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PROJ APPR/DATE	PCM APPR/DATE	CHECKED	RESP. ENG.	REVIEWED	REVIEWED	REVIEWED	COMPLIANCE	PROJ APPR/DATE	PCM APPR/DATE
STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER		STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER		STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER		STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER		STRUCTURAL		MECHANICAL		ELECTRICAL		OTHER	

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG TRAIN B MCC
ECC-MCC2110
ONE-LINE
DIAGRAM

Duke Cogema Stone & Webster

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-96CH3688

SIZE	SCALE	SHEET
D	N/A	1 OF 2

ORIG.	FCT.	SP.	FUNC. SUBJ. NUMBER				REV.
DC501	ECC	05	SCE	E	26051		A

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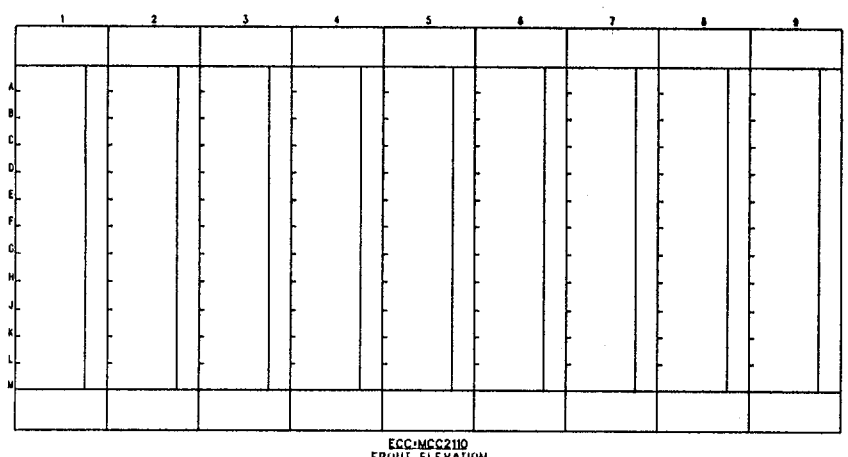

ECC-MCC2110
FRONT ELEVATION

480 VOLT MOTOR CONTROL CENTER CHART (CONTINUED)

CUBICLE NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	STARTER OR BREAKER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	LOAD/ H.P.	OVERLOAD TYPE	OVERLOAD SETTING	CONTROL TRANSFORMER SIZE	FUSE SIZE	SCHEMATIC DIAGRAM	CONNECTION DIAGRAM	DESCRIPTION	REMARKS

NOTES:
1. FOR TYPICAL STARTER AND BREAKER TYPES SEE SHEET 1.

ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE	ISSUE	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDE APPR/DATE
DRAWN		PDU APPR/DATE	FDM APPR/DATE	DRAWN		PDU APPR/DATE	FDM APPR/DATE	DRAWN		PDU APPR/DATE	FDM APPR/DATE	DRAWN		PDU APPR/DATE	FDM APPR/DATE	DRAWN		PDU APPR/DATE	FDM APPR/DATE	DRAWN		PDU APPR/DATE	FDM APPR/DATE
CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE				CHECKED / RESP. ENG. / REVIEWED / REVIEWED / REVIEWED / COMPLIANCE			
STRUCTURAL / MECHANICAL / ELECTRICAL			OTHER	STRUCTURAL / MECHANICAL / ELECTRICAL			OTHER	STRUCTURAL / MECHANICAL / ELECTRICAL			OTHER	STRUCTURAL / MECHANICAL / ELECTRICAL			OTHER	STRUCTURAL / MECHANICAL / ELECTRICAL			OTHER	STRUCTURAL / MECHANICAL / ELECTRICAL			OTHER

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG TRAIN B MCC
ECC-MCC2110
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORG.	FCT.	GP.	TYPE	DOC. NUMBER		REV.
DCS01	ECB	OS	SCE	E	26051	A

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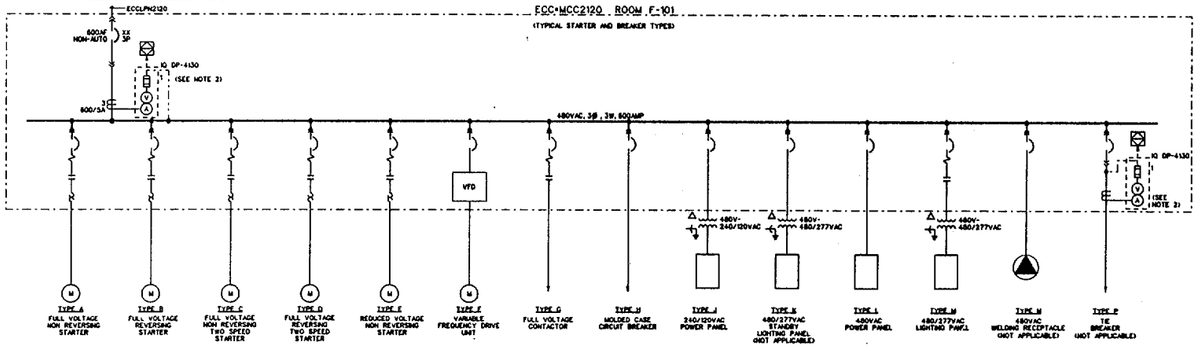

NOTES:

1. REFER TO ELECTRICAL ONE-LINE DIAGRAM SYMBOL SHEET DC501-EZ-05-SCE-E-26000.
2. IQ DEVICE PROVIDES BUS ELECTRICAL DATA AND ALARMS BUS GROUND CONDITION.
3. FOR FRONT ELEVATION & ADDITIONAL LOADS, REFER TO NEXT SHEET.

480 VOLT MOTOR CONTROL CENTER CHART

CUBICLE NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	STARTER OR BREAKER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	LOAD/ H.P.	OVERLOAD TYPE	OVERLOAD SETTING	CONTROL TRANSFORMER SIZE	FUSE SIZE	SCHEMATIC DIAGRAM	CONNECTION DIAGRAM	DESCRIPTION	REMARKS
		ECCLPN2120												INCOMING	
	SPARE														
	EBB-XRC2110	EBBLPN210004/06	TYPE H				50KVA						DC501-EBB-05-SCE-E-26063	120VAC EMERGENCY TRAIN B U.P.S. TRANSFORMER (VITAL), ALTERNATE FEED	
	EPH-XS2102	EPHLPN2102201	TYPE J				5KVA						M/A	240/120VAC EMERGENCY TRAIN B POWER DISTRIBUTION TRANSFORMER	
N/A	EPH-PNL2122	EPHLPN2102202	N/A										DC501-EPH-05-SCE-E-26097	240/120VAC EMERGENCY TRAIN B POWER DISTRIBUTION PANEL	
	EPC-XS2101	EPCLPN2102101	TYPE M				10KVA						M/A	480/277VAC EMERGENCY TRAIN B LIGHTING TRANSFORMER	
N/A	EPC-PNL2121	EPCLPN2102102	N/A										DC501-EPC-05-SCE-E-26075	480/277VAC EMERGENCY TRAIN B LIGHTING PANEL	
	later	later	TYPE A				25KW							HVAC UNIT WITH CONTROLS	
	later	later	TYPE A				5HP							ROOF EXHAUST FAN	
	BEG-HTR0103F	BEGLPN0103F	TYPE A				5HP							DIESEL ROOM HEATER	
	ECC-BAT2001	ECCLPN2001	TYPE N											DIESEL GENERATOR BATTERY CHARGER 1	
	ECC-BAT2002	ECCLPN2002	TYPE N											DIESEL GENERATOR BATTERY CHARGER 2	
	ECF-P25028	EGFLPN25028	TYPE A				2HP					DC501-EGF-05-SCE-E-29181	DC501-EGF-05-SCE-E-29181	FUEL OIL TRANSFER PUMP	
	EGF-HTR2001	EGFLPN2001	TYPE A				6KW							JACKET WATER HEATER	

LEGEND: (REFER TO REMARKS COLUMN)

BC -BRAKE CONTACTOR
PEP -PERSONAL/EQUIPMENT PROTECTION RELAY
SFTY -SAFETY RELAY
CS -CONTROL SWITCH AT CUBICLE DOOR. (REFER TO SCHEMATICS FOR TYPE)

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG TRAIN B MCC
ECC+MCC2120
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

REV	SCALE	SHEET
0	N/A	1 OF 2

DWG	FCC	BP	TYP	BRC	SUBBP	REV
DC501	ECC	05	SCE	E	26052	A

DESIGN REVIEW	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

DESIGN REVIEW	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

DESIGN REVIEW	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

DESIGN REVIEW	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

DESIGN REVIEW	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

DESIGN REVIEW	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

DESIGN REVIEW	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

DESIGN REVIEW	STRUCTURAL	MECHANICAL	ELECTRICAL	OTHER

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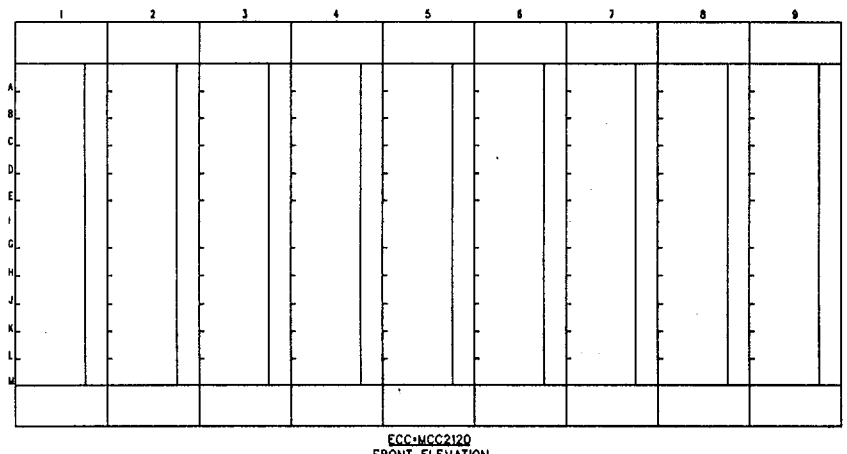


ECC-MCC2120
FRONT ELEVATION

480 VOLT MOTOR CONTROL CENTER CHART (CONTINUED)

CUBICLE NUMBER	EQUIPMENT IDENTIFICATION	CABLE NUMBER	STARTER OR BREAKER	SIZE	BREAKER FRAME	BREAKER TRIP SETTING	LOAD/ H.P.	OVERLOAD TYPE	OVERLOAD SETTING	CONTROL TRANSFORMER SIZE	FUSE SIZE	SCHEMATIC DIAGRAM	CONNECTION DIAGRAM	DESCRIPTION	REMARKS

NOTES:
1. FOR TYPICAL STARTER AND BREAKER TYPES SEE SHEET 1.

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480VAC EMERG TRAIN B MCC
ECC-MCC2120
ONE-LINE
DIAGRAM

DUKE COGEMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

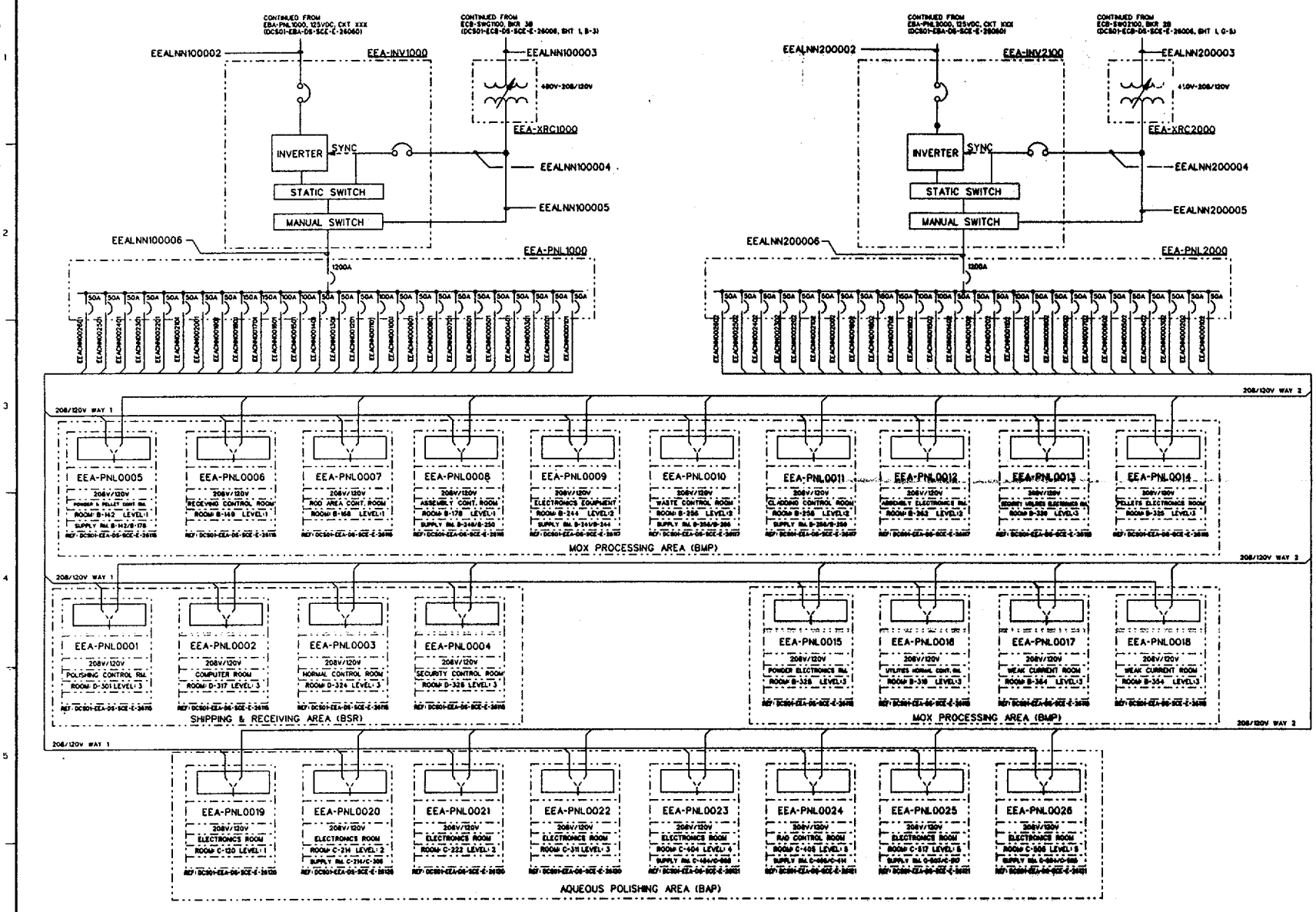
SIZE	SCALE	SHEET
D	N/A	2 OF 2

ORIG.	FCY.	OP.	TYPE	DWG. NUMBER	REV.
DCS01	ECB	DS	SCE	E 26052	A

DESIGN REVIEW

s2605202.dgn

ISSUE / DRAWN	DESCRIPTION	DESIGN VERIFIED APPR/DATE	LDC APPR/DATE	FDH APPR/DATE	FDH APPR/DATE	CHECKED	REVIEWED (STRUCTURAL)	REVIEWED (MECHANICAL)	REVIEWED (ELECTRICAL)	COMPLIANCE



PRELIMINARY

QUALITY LEVEL - 3

MOX FUEL FABRICATION FACILITY
120 VOLT ESSENTIAL POWER
EEA-PNL1000 & 2000
ONE-LINE
DIAGRAM

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 of 1

DWG.	PCT.	SP.	TYP.	DWG.	NUMBER	REV.
DC501	EEA	DS	SCE	E	26058	A

ISSUED FOR FINAL DESIGN

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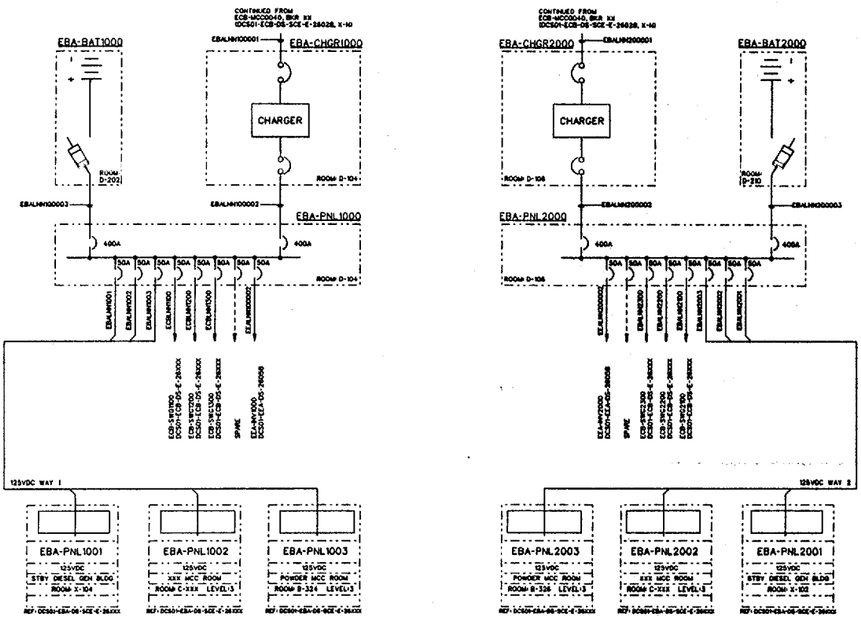


PRELIMINARY

QUALITY LEVEL - 3

MOX FUEL FABRICATION FACILITY
125VDC POWER, NORMAL
EBA-PNL1000 & 2000
ONE-LINE
DIAGRAM

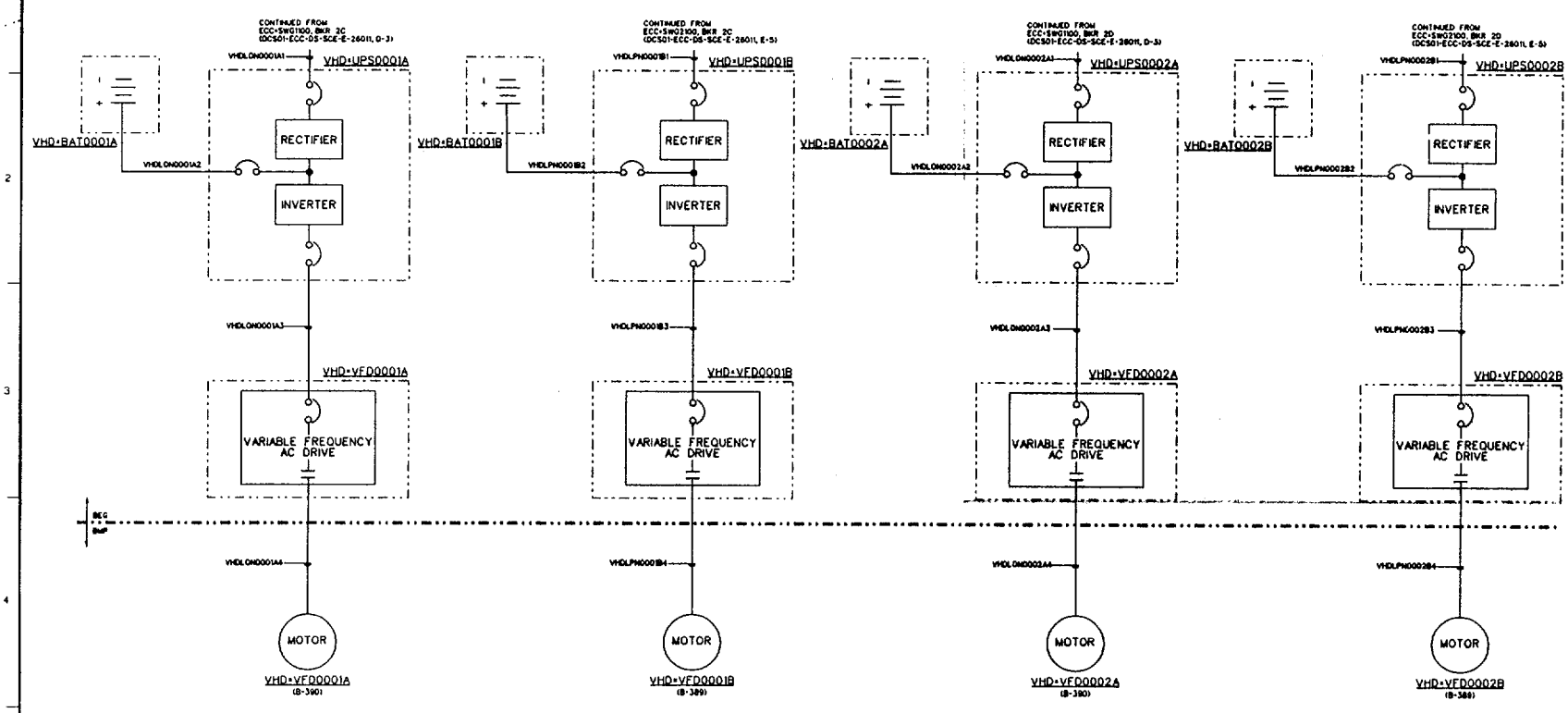
DUKE ENGINEERING & SERVICES

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

REV	SCALE	SHEET
0	N/A	1 of 1

DISC	SYS.	OF	TYPE	DISC.	NUMBER	REV.
DC501	EBA	05	SCE	E	26060	A

| DESCRIPTION | | |



NOTES:
1. VFD FANS SHALL HAVE STOP/START SWITCHES AND RUN STATUS AT HVAC EMERGENCY CONTROL PANEL.

REFERENCES:
VHD CONNECTION DIAGRAM..... DCS01-VHD-DS-SCE-E-XXXXX

PRELIMINARY

QUALITY LEVEL - 1 (IROFS)

MOX FUEL FABRICATION FACILITY
480 VOLT U.P.S., EMERGENCY
VHD-FAN0001A/B, 0002A/B
ONE-LINE
DIAGRAM

BLAIS COGAMA STONE & WEBSTER

U.S. DEPARTMENT OF ENERGY
CHICAGO OPERATIONS OFFICE
MOX FUEL FABRICATION FACILITY
Contract No. DE-AC02-99CH10888

SIZE	SCALE	SHEET
D	N/A	1 OF 1

ORIG.	FCI	OP	TYPE	DISC	NUMBER	REV.
DCS01	VHD	DS	SCE	E	26063	A

ISSUED FOR FINAL DESIGN

< DESIGN REVIEW

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