DWG. NO. 2-121000

1200A LB — LOAD BREAK DISCONNECT SWITCH CONTINUOUS CURRENT RATING

M — MOTOR OPERATED DISCONNECT SWITCH

M — HORIZONTAL DOUBLE BREAK HV DISCONNECT SWITCH
M - MOTOR OPERATED

HORN GAP SWITCH

LOAD INTERRUTER SWITCH

9KV — SURGE ARRESTER WITH GAP AND ARRESTER RATING

9KV — GAPLESS SURGE ARRESTER AND ARRESTER RATING

9KV, DC — SURGE ARRESTER WITH GAP VALVE AND DISCHARGE COUNTER

0.10 OHM 600A — REACTOR WITH OHMIC VALUE AND CONTINUOUS CURRENT RATING

DISCONNECT LINK

GROUND

CABLE TERMINATION

ISOLATED PHASE BUS DUCT

SEGREGATED PHASE BUS DUCT

NON-SEGREGATED PHASE BUS DUCT

1200A — FIXED POWER CIRCUIT BREAKER WITH MAXIMUM CONTINUOUS CURRENT RATING

1200A — DRAWOUT POWER CIRCUIT BREAKER WITH MAXIMUM CONTINUOUS CURRENT RATING

SWGR. TIE BREAKER

L — DRAWOUT MEDIUM VOLTAGE MOTOR STARTER
L - IF LATCHING TYPE

BLOCKING DIODE

BRIDGE TYPE RECTIFIER

POWER RECEPTACLE

THREE PHASE WYE CONNECTED HEATER

1200A — FIXED LOW VOLTAGE CIRCUIT BREAKER WITH FRAME SIZE, FOR KEY ONE LINE USE ONLY

1200A — PLUG-IN LOW VOLTAGE CIRCUIT BREAKER WITH FRAME SIZE, FOR KEY ONE LINE USE ONLY

1200A — DRAW-OUT LOW VOLTAGE CIRCUIT BREAKER WITH FRAME SIZE, FOR KEY ONE LINE USE

1200A — FIXED THERMAL MAGNETIC CIRCUIT BREAKER WITH TRIP CURRENT RATING

1200A — PLUG-IN THERMAL MAGNETIC CIRCUIT BREAKER WITH TRIP CURRENT RATING

50A — FIXED COMBINATION CIRCUIT BREAKER AND CONTACTOR, WITH BREAKER TRIP RATING FOR MCC ONE LINE

FULL SPACE BREAKER IN MCC

FULL VOLTAGE REVERSING STARTER FVRS

BREAKER AND CONTACTOR NO OVERLOAD HEATERS

25 — MOTOR WITH HORSEPOWER

50 — WOUND ROTOR MOTOR WITH HORSEPOWER

25 — HEATER WITH KW RATING

45 KVA — MISCELLANEOUS LOAD WITH KW OR KVA RATING

DISCONNECT DEVICE-PLUG OR COUPLING TYPE CONTACT

MAGNETIC TRIP UNIT

THERMAL DEVICE

MAGNETIC CONTACTOR

REVERSABLE MAGNETIC CONTACTOR

4 — MOTOR STARTER OR CONTACTOR WITH NEMA STARTER SIZE AND NEMA TYPE ENCLOSURE

A — DC BATTERY CHARGER (ONE-LINE)

H2, H1, H3, B(X2), A(X1), C(X3) — 6,900-480V/277V 750 KVA — TWO WINDING TRANSFORMER SINGLE PHASE OR POLYPHASE WITH VOLTAGES, XFMR SIZE, TERMINAL MARKINGS AND ANGULAR DISPLACEMENT

THREE WINDING TRANSFORMER SINGLE PHASE OR POLYPHASE

POWER TRANSFORMER WITH LOAD TAP CHANGING EQUIPMENT

THREE PHASE TRANSFORMER WITH BURIED TERITARY WINDING

POWER CONDITIONER

0 A SEC. — NEUTRAL GROUNDING TRANFORMER WITH SECONDARY RESISTOR

NEUTRAL CONNECTION POINT

A — CTL. TRANS. KVA, IF — CONTROL TRANSFORMER

3-4200/120V — TWO WINDING POTENTIAL TRANSFORMER WITH NUMBER OF TRANSFORMERS AND POTENTIAL RATIO

V — KVA — THREE WINDING POTENTIAL TRANSFORMER

CAPACITANCE BUSHING WITH CONNECTED POTENTIAL DEVICE

CURRENT TRANSFORMER

CURRENT TRANSFORMER WITH POLARITY MARKING (THREE LINE)

3-600/5 MR 400:1 — BUSHING TYPE CURRENT TRANSFORMER NUMBER OF TRANSFORMERS AND RATIO INDICATED, MR INDICATES MULTI-RATIO CURRENT TRANSFORMER CONNECTED AS SHOWN UNDERLINED

ZERO SEQUENCE, WINDOW TYPE CURRENT TRANSFORMER (ONE LINE)

ZERO SEQUENCE, WINDOW TYPE CURRENT TRANSFORMER (THREE LINE)

LINEAR COUPLER

COUPLING CAPACITOR VOLTAGE TRANSFORMER (CCVT)

PHASE SHIFTER

DEVICE — CURRENT TEST SWITCH

ELECTRICAL CONNECTION OR INTERLOCKING

THREE PHASE DELTA CONNECTION

THREE PHASE BROKEN DELTA CONNECTION

THREE PHASE OPEN DELTA CONNECTION

THREE PHASE OPEN DELTA GROUNDED AT COMMON POINT

THREE PHASE WYE CONNECTED NEUTRAL UNGROUNDED

THREE PHASE WYE CONNECTED SOLIDLY GROUNDED NEUTRAL

THREE PHASE WYE CONNECTED WITH NEUTRAL GROUNDING RESISTOR FOR LOW RESISTANCE GROUND

THREE PHASE WYE CONNECTED WITH NEUTRAL GROUNDING RESISTOR FOR HIGH RESISTANCE GROUND

NORMALLY OPEN CONTACT

NORMALLY CLOSED CONTACT

TDO — TIME DELAY OPEN CONTACT

TDC — TIME DELAY CLOSE CONTACT

CAPACITOR AND VARIABLE CAPACITOR

RESISTOR WITH OHMIC VALUE

2.77 OHM — VARIABLE RESISTOR WITH OHMIC VALUE

SOLID LINK

INSTRUMENT OR RELAY SHUNT

30A — FUSE WITH CURRENT RATING

30A, 100A — FUSED DISCONNECT SWITCH WITH FUSE CURRENT RATING AND SWITCH CURRENT RATING

DOUBLE THROW SWITCH

RECTIFIER

MAGNETIC BLOWOUT COIL

KI — KEY INTERLOCK

INVERTER

RECTIFIER OR BATTERY CHARGER

(-) — BATTERY (LONG DASH IS POSITIVE POLARITY)

DCS EXTERNAL CONNECTION TERMINAL

R — INDICATING LIGHT
A - AMBER
B - BLUE
C - CLEAR
G - GREEN
O - ORANGE
R - RED
W - WHITE

PF — RECORDING OR REGISTERING DEVICE
PF - POWER FACTOR
VAR - REACTIVE VA
W - WATT
WH - WATTHOUR

AS — CONTROL OR SELECTION SWITCH
AS - AMMETER SWITCH
CO - CUTOFF SWITCH
CS - CONTROL SWITCH
GS - GOVERNOR SWITCH
PB - PUSHBUTTON
RH - RHEOSTAT MOTOR SWITCH
SS - SYNCHRONIZING SELECTOR SWITCH
SLS - SELECTOR SWITCH
TC - TAP CHANGER SWITCH
VR - VOLTAGE REGULATOR SWITCH
VS - VOLTMETER SWITCH
WV - WATT-VAR SWITCH

A, MF — METER OR MULTI-FUNCTION DEVICE
AM - AMMETER
AH - AMPERE-HOUR METER
ADCR - AMP TRANSDUCER
CMA - CONTACT-MAKING (OR BREAKING) AMMETER
CMC - CONTACT MAKING (OR BREAKING) CLOCK
CMV - CONTACT MAKING (OR BREAKING) VOLTMETER
CRO - OSCILLOSCOPE
DM - DEMAND METER
ET - ELAPASED TIME METER
F - FREQUENCY METER
MF - MULTI-FUNCTION METERING DEVICE
PF - POWER FACTOR METER
PM - POWERMTER
SYNC - SYNCHROSCOPE
V - VOLTMETER
VAR - VARMETER
VARH - VARHOUR METER
VDCR - VOLTAGE TRANSDUCER
W - WATTMETER
WH - WATTHOUR METER
WHV/VH - WATTHOUR/VARHOUR METER

NOTES:
SQE - SEQUENCE OF EVENTS RECORDER
CPI - CONTROL POWER INTERLOCK
TPI - TEST POWER INTERLOCK

86, 21, DP — RELAY OR DEVICE - FOR DEVICE NUMBERS AND DESCRIPTION, SEE TABLE

DEVICE NO.	DESCRIPTION
2	TIME DELAY STARTING OR CLOSING RELAY
21	DISTANCE RELAY
22	EQUALIZER CIRCUIT BREAKER
24	VOLT/HERTZ PROTECTION WITH VOLTAGE REGULATOR
25	SYNCHRONIZING OR SYNCHRONISM CHECK DEVICE
26	APPARATUS THERMAL DEVICE
27	UNDERVOLTAGE DEVICE
32	DIRECTIONAL POWER RELAY
33	POSITION SWITCH
37	UNDERCURRENT OR UNDERPOWER RELAY
38	BEARING PROTECTIVE DEVICE
40	FIELD RELAY
41	FIELD CIRCUIT BREAKER
42	RUNNING CIRCUIT BREAKER
43	MANUAL TRANSFER OR SELECTOR DEVICE
46	REVERSE PHASE OR PHASE BALANCE CURRENT RELAY
47	PHASE-SEQUENCE VOLTAGE RELAY
48	INCOMPLETE SEQUENCE RELAY
49	MACHINE OR TRANSFORMER THERMAL RELAY
50	INSTANTANEOUS OVERCURRENT RELAY
51	AC TIME OVERCURRENT RELAY
58	RECTIFICATION FAILURE RELAY
59	OVERVOLTAGE RELAY
60	VOLTAGE OR CURRENT BALANCE RELAY
62	TIME DELAY RELAY
63	PRESSURE SWITCH
64	GROUND PROTECTIVE RELAY
67	DIRECTIONAL OVERCURRENT RELAY
71	LEVEL SWITCH
74	DC TRIPPING BLOWN FUSE RELAY
76	DC OVERCURRENT RELAY
78	OUT-OF-STEP RELAY (LOSS OF SYNC)
80	FLOW SWITCH
81	FREQUENCY RELAY
83	AUTOMATIC SELECTIVE CONTROL OF TRANSFER RELAY
85	CARRIER OR PILOT-WIRE RECEIVER RELAY
86	LOCKOUT RELAY
87	DIFFERENTIAL PROTECTIVE RELAY
89	LINE SWITCH
90	REGULATING DEVICE
94	TRIPPING OR TRIP-FREE RELAY
96	ANALOG TRANSDUCER
BP	MULTI-FUNCTION BUS PROTECTION
CP	MULTI-FUNCTION BREAKER PROTECTION
DP	MULTI-FUNCTION DIFFERENTIAL PROTECTION
FP	MULTI-FUNCTION FEEDER PROTECTION
LP	MULTI-FUNCTION LINE PROTECTION
MP	MULTI-FUNCTION MOTOR PROTECTION
TP	MULTI-FUNCTION TRANSFORMER PROTECTION

PRELIMINARY-FOR COMMENTS

REV	DATE	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/TECHNICIAN	LEAD DISC ENGINEER	PROJ.ENGR MANAGER	PROJECT MANAGER
A	12/09/05	BMT		KRB	YRT	YRT	SJP	FGN

DATE	NO.	DESCRIPTION	APPD.
		REVISIONS	

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WorleyParsons resources & energy

PRELIMINARY STATUS — LDE YR TAMAYO	DATE 12/09/05	REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
APPROVED STATUS — LDE	DATE	REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

ORIGINATING PERSONNEL
DRAWN BY: BM TATE
CHECKED BY:
LEAD DESIGNER: KR BIEBER
ENGINEER/TECH SPECIALIST: YR TAMAYO
PROJECT ENGINEERING MANAGER: SJ PIEKOS
PROJECT MANAGER: FG NADEAU

PROFESSIONAL ENGINEER'S SEAL
ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE:_____ STATE:_____
LIC. NO.:_____ DATE:_____

KENTUCKY POWER COMPANY
BIG SANDY PLANT
BIG SANDY KENTUCKY

ELECTRICAL
ONE LINE DIAGRAM
LEGEND

DWG. NO. 2-121000-A

SCALE: DR: CH: SUPV: ENGR: DATE:
APPROVED BY
ELECTRICAL & CONTROLS ENGINEERING DIV.
DOCUMENT PREPARED BY PARSONS E&C

AEP AMERICAN ELECTRIC POWER
AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

DWG-FILE: 2-121000.dgn
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SYSTEM TIME-HOUR:MINUTE

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