LEGEND

AM	AMMETER
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
DO	DRAW-OUT MOUNTED
EO	ELECTRICALLY OPERATED
FSS	FIRST START SENSOR
GLC	GENSET LONWORKS CARD
GCM	GENSET COMMUNICATION MODULE
HZ	FREQUENCY METER
ILS	ISOCHRONOUS LOAD SHARING CONTROL
MSS	MASTER START SENSOR
NGR	NEUTRAL GROUND RESISTOR
PF	POWER FACTOR METER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PT	POTENTIAL TRANSFORMER
SEL SW	SELECTOR SWITCH
15	SYNCHRONIZER
VM	VOLTMETER
WHM	WATT-HOUR METER
WM	WATTMETER
XDR	TRANSDUCER
25	SYNC CHECK RELAY
27	UNDERVOLTAGE RELAY
32	DIRECTIONAL POWER RELAY
40	LOSS OF EXCITATION RELAY
47	NEGATIVE SEQUENCE VOLTAGE RELAY
50/51	TIME OVERCURRENT RELAY
51G	GROUND TIME OVERCURRENT RELAY
52-G'N'	GENERATOR PARALLELING CIRCUIT BREAKER
59	OVERVOLTAGE RELAY
81	OVER/UNDER FREQUENCY RELAY
86	LOCKOUT RELAY
———	CONTROL POWER WIRES
·····	CONTROL SIGNAL OR DATA WIRES
—·—·—	ETHERNET WIRE
– – – –	MODBUS WIRE
—·—·—·—	MODBUS+ WIRE
– – – –	POWER CABLING
———	POWER SYSTEM BUS
	FUSE
	PHYSICAL ENCLOSURE

NOTES:

1. INTERCONNECTION WIRING TO BE 14 AWG STRANDED WIRE MINIMUM. AC AND DC CONTROL WIRES TO BE RUN IN SEPARATE CONDUITS.

2. BATTERY CHARGER TO BATTERY WIRING TO BE SIZED FOR CHARGER OUTPUT AND LENGTH OF RUN.
   FOR DC CONNECTIONS: USE 14 AWG OR LARGER FOR WIRE UP TO 40 FEET.
   USE 12 AWG OR LARGER FOR WIRE UP TO 50 FEET.
   USE 10 AWG OR LARGER FOR WIRE UP TO 100 FEET.
   FOR AC CONNECTIONS: USE 14 AWG OR LARGER FOR WIRE UP TO 100 FEET.

3. CUSTOMER USE OF THE REMOTE EMERGENCY STOP, REMOTE START CONTROL, REMOTE PEAK SHAVE, AND REMOTE BASE LOAD FUNCTIONS ARE OPTIONAL. IF USED CUSTOMER SHOULD SUPPLY A N.O. DRY CONTACT THAT CLOSES TO ACTIVATE.

4. PLC N.C. MALFUNCTION CONTACT WILL CLOSE IN EVENT OF A PLC FAILURE.

5. MODBUS PLUS (MB+) NETWORK WIRING – WIRE MUST BE ONAN A008E026 OR SQUARE D MODICON P/N 490NAA27103. CONSULT FACTORY IF DISTANCE FROM POWER SECTIONS TO MASTER CONTROL EXCEEDS 1500 FEET.

6. NET DATA WIRES TO BE MINIMUM 22 AWG NEMA LEVEL IV TWISTED PAIR COMMUNICATIONS CABLE. ONAN PART NUMBER A000Y856 (PVC) OR A000Y855 (PLENUM RATED) IS RECOMMENDED. CONNECTIONS ARE NOT POLARITY SENSITIVE. CONSULT THE FACTORY IF SUM OF DISTANCES FROM EACH GENSET TO THE MASTER CONTROL EXCEEDS 4600 FEET. DO NOT RUN IN CONDUIT WITH OTHER INTERCONNECT WIRES.

7. THE BREAKER TRIP COIL IS OPERATED BY A DRY CONTACT IN THE MASTER CONTROL. THE BREAKER CLOSE COIL IS OPERATED BY A DRY CONTACT IN THE MASTER CONTROL. CONTROL POWER FOR BREAKER CLOSE AND MOTOR OPERATION IS PROVIDED IN THE SWITCHGEAR. CONTACTS ARE RATED 10A, 120VAC/28VDC

8. ALL DEVICES NAMED WITH 'N'– THE 'N' IS REPLACED WITH THE GENSET# (TB11–G'N' FOR GEN.#1 IS TB11–G1, GEN.#2 IS TB11–G2, ETC.)

9. NET DATA AND PARALLELING CABLES– CONNECT AS A DAISY CHAIN TO GEN.#2. THEN FROM GEN.#2 TO GEN.#3. ETC. GCM SWITCH S3 SET TO 'TERM' POSITION ON LAST GENSET ONLY.

10. PULL 20% EXTRA WIRES ON ALL RUNS FOR SPARES.

11. TOC 'A' SHOWN WITH CIRCUIT BREAKER IN THE RACKED OUT POSTION

PC NO.	LTR	NO.	REVISION	ZONE	DRA	CHKR	APRV	DATE
PC104235	01	–	PRODUCTION RELEASE ASBUILT	–	VS	VS	KT	08/25/10

PROJECT:
ARECIBO OBSERVATORY SWITCHGEAR
NOTES
DISTRIBUTOR:
CUMMINS CARIBBEAN
7071681

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PART NO.	DWG SIZE	DESCRIPTION OF MATERIAL	REF DES

	NAME	DATE
DR	V.SIVAN	02/19/10
CHKR	V.SIVAN	02/19/10
MFG		
APPROVED	K.TWUMASI	02/19/10

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ANSI Y14.5M–1982

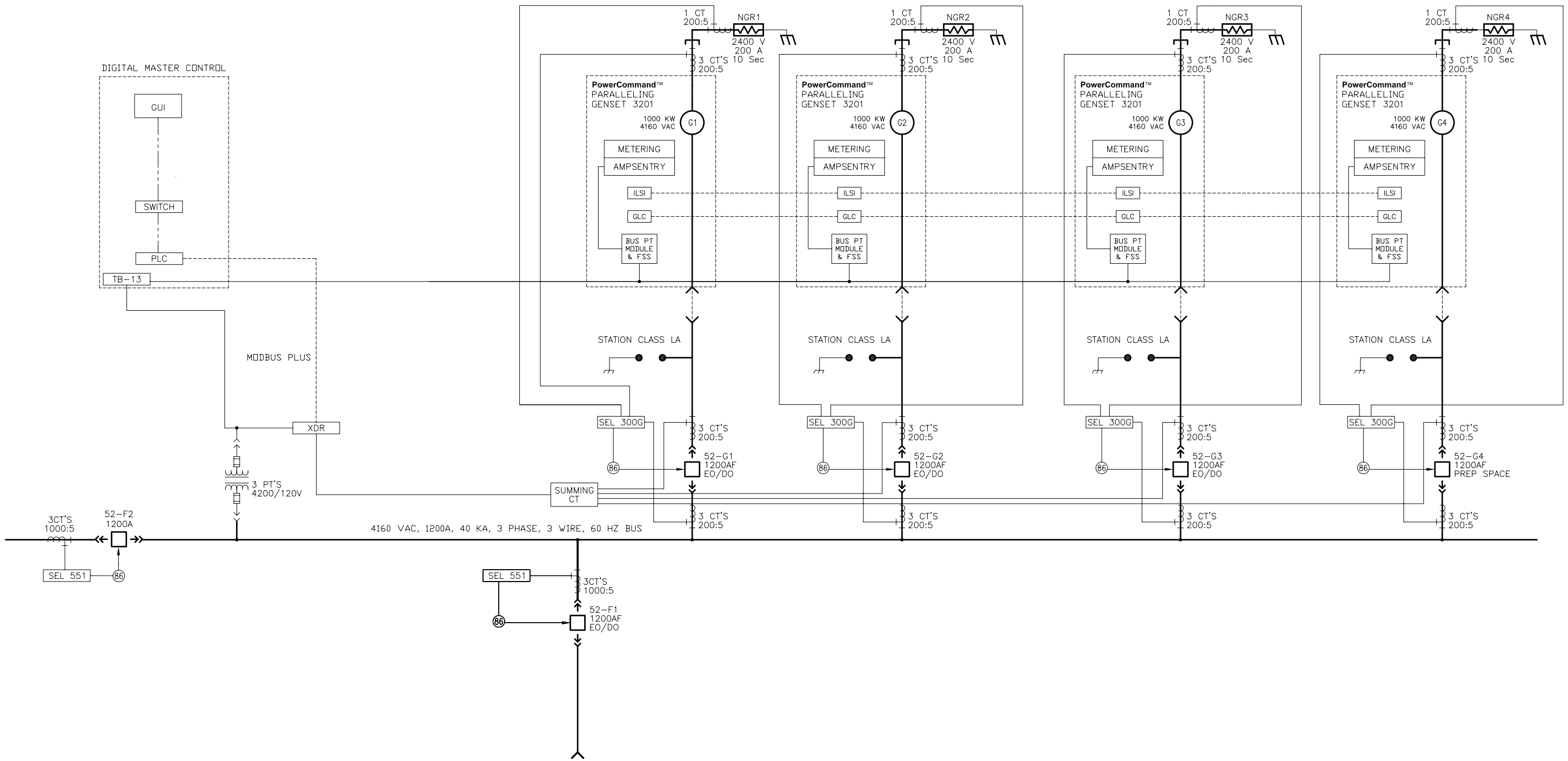
MODEL FIRST USED ON PCIL2004R–772F

SITE CODE PGA

CUMMINS POWER GENERATION
1400 73rd AVE.NE
MINNEAPOLIS, MN 55432

TITLE WD–INTERCONNECTION

DWG NO. A030S864 SHEET 1 OF 7 DWG SIZE D



PC NO.	LTR	NO.	REVISION	ZONE	DRA	CHKR	APRV	DATE
PC104235	01	–	PRODUCTION RELEASE ASBUILT	–	VS	VS	KT	08/25/10

PROJECT:
ARECIBO OBSERVATORY SWITCHGEAR
ONE LINE
DISTRIBUTOR:
CUMMINS CARIBBEAN
7071681

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AUTOCAD DWG

PART NO.	DWG SIZE	DESCRIPTION OF MATERIAL	REF DES

	NAME	DATE
DR	V.SIVAN	02/19/10
CHKR	V.SIVAN	02/19/10
APPROVED	K.TWUMASI	02/19/10

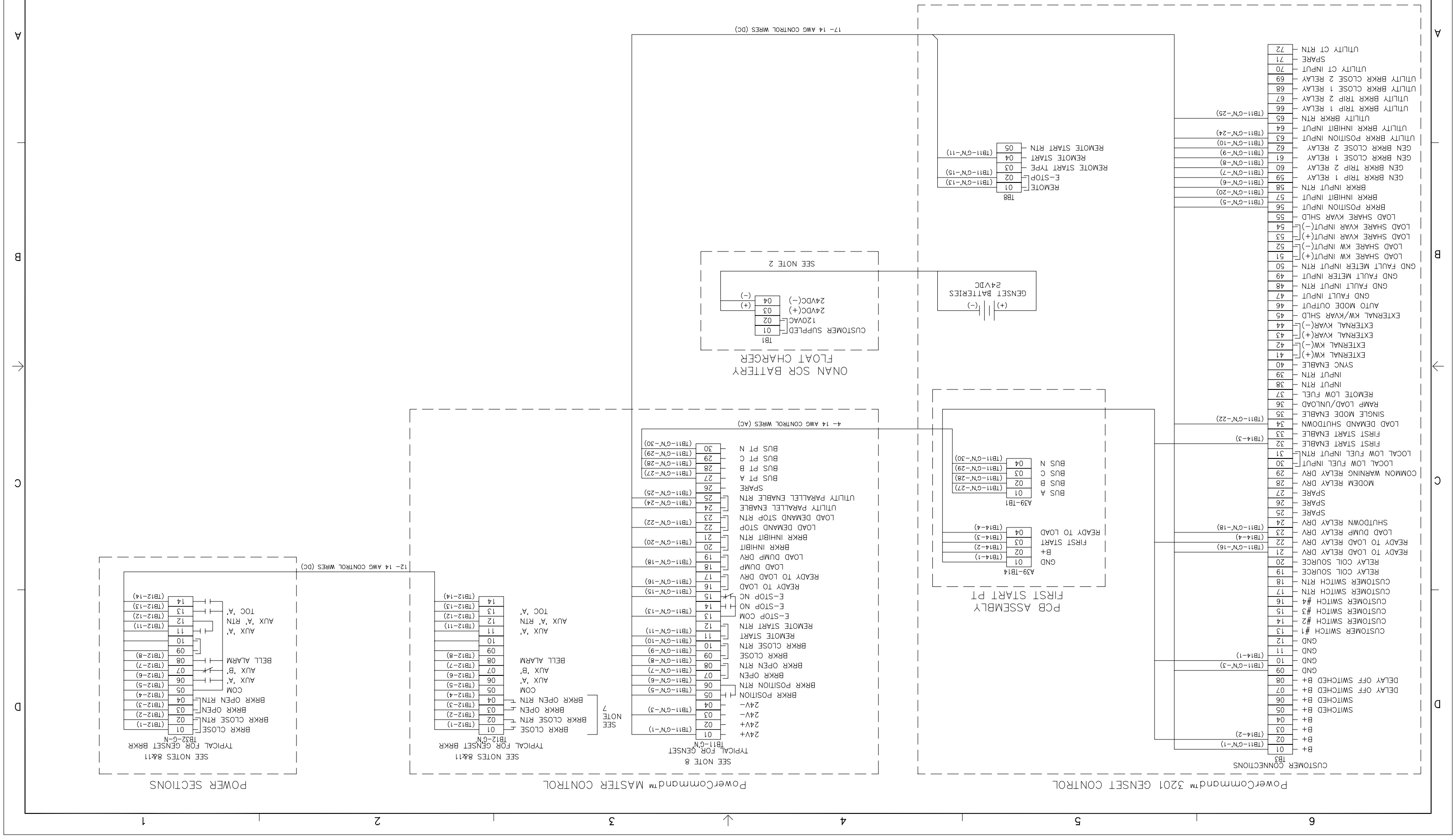
MODEL FIRST USED ON: PCIL2004R-772F

SITE CODE: PGA

CUMMINS POWER GENERATION
1400 73rd AVE NE
MINNEAPOLIS, MN 55432

TITLE: WD-INTERCONNECTION

DWG NO. A030S864 | SHEET 2 OF 7 | DWG SIZE D



PC NO.	LTR	NO.	REVISION	ZONE	DRA	CHKR	APRV	DATE
PC104235	01	–	PRODUCTION RELEASE ASBUILT	–	VS	VS	KT	08/25/10

PROJECT:
ARCGBO OBSERVATORY SWITCHGEAR
GENSET INTERCONNECT 1
CUMMINS CARIBBEAN
DISTRIBUTOR:
707168I

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	NAME	DATE
DR	V.SIVAN	02/19/10
CHKD	V.SIVAN	02/19/10
APPROVED	K.TMUMASI	02/19/10

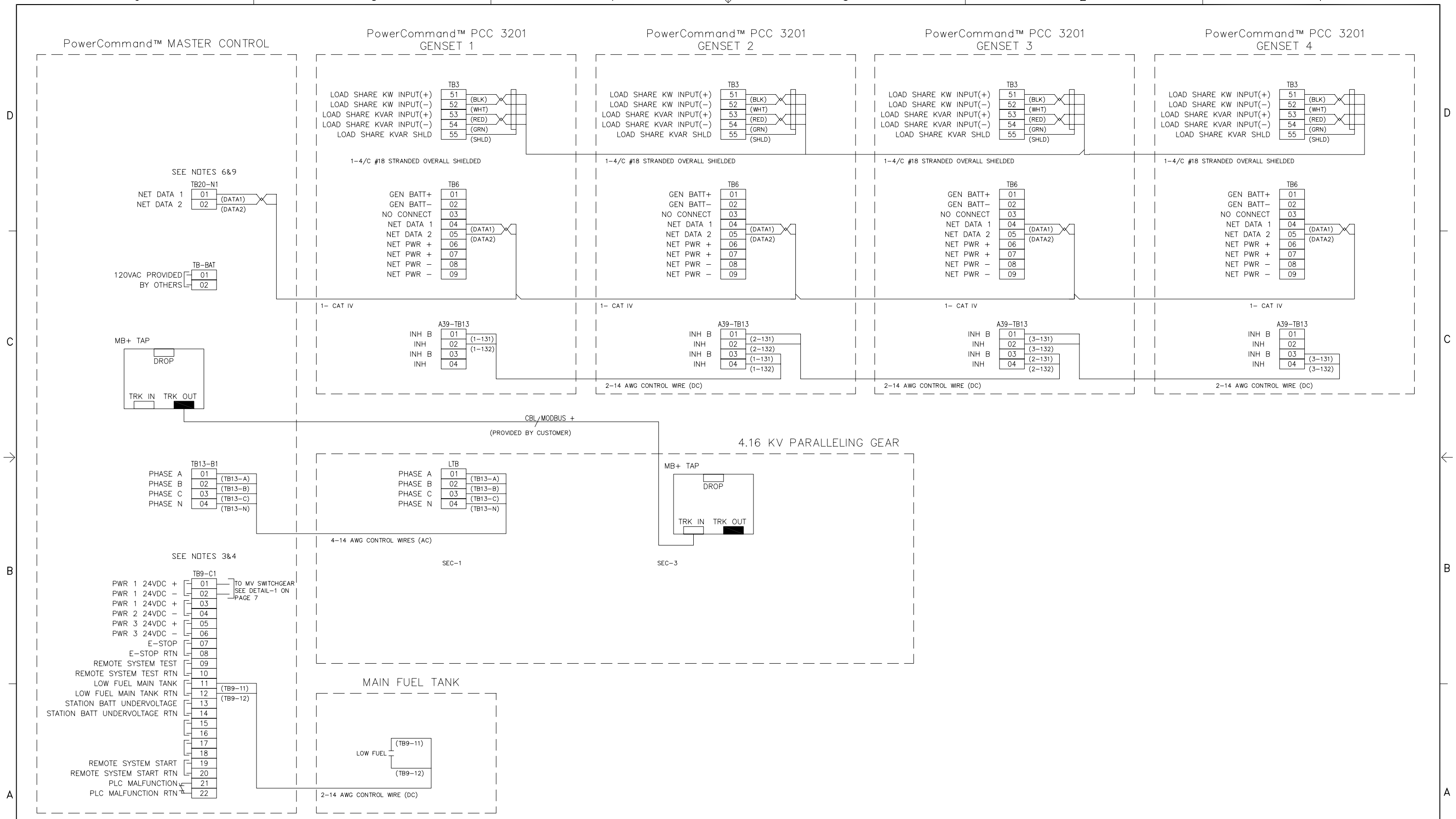
CUMMINS POWER GENERATION
1400 73rd AVE NE
MINNEAPOLIS, MN 55432

TITLE WD-INTERCONNECTION

SITE CODE PGA

DWG NO. A030S864 SHEET 3 of 7 REV D

AUTOCAD DWG
PCL1200AR-772F



PC NO.	LTR	NO.	REVISION	ZONE	DRA	CHKR	APRV	DATE
PC104235	01	–	PRODUCTION RELEASE ASBUILT	–	VS	VS	KT	08/25/10

PROJECT:
ARECIBO OBSERVATORY SWITCHGEAR
GENSET INTERCONNECT 2
DISTRIBUTOR:
CUMMINS CARIBBEAN
7071681

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PART NO.	DWG SIZE	DESCRIPTION OF MATERIAL	REF DES

	NAME	DATE
DR	V.SIVAN	02/19/10
CHKR	V.SIVAN	02/19/10
MFG		
APPROVED	K.TWUMASI	02/19/10

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ANSI Y14.5M-1982

MODEL FIRST USED ON PCIL2004R-772F

SITE CODE PGA

CUMMINS POWER GENERATION
1400 73rd AVE. NE
MINNEAPOLIS, MN 55432

TITLE WD-INTERCONNECTION

DWG NO. A030S864 | SHEET 4 OF 7 | DWG SIZE D

PC NO.	LTR	NO.	REVISION	ZONE	DRA	CHKR	APRV	DATE	PC NO.	LTR	NO.	REVISION	ZONE	DRA	CHKR	APRV	DATE
									PC104235	01	–	PRODUCTION RELEASE ASBUILT	–	VS	VS	KT	08/25/10

PROJECT:
ARECIBO OBSERVATORY SWITCHGEAR
A030S865_REV_01_SHT_
CUMMINS CARIBBEAN
DISTRIBUTOR:
707168I

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SW 10 | CORPD FINISH

	NAME	DATE
DR	V.SIVAN	02/19/10
CHKD MFG	V.SIVAN	02/19/10
APPROVED	K.TMUMASI	02/19/10

MODEL FIRST USED ON PCIL2004R-77ZF

FROM INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ANSI Y14.5M-1982

SITE CODE PGA

CUMMINS POWER GENERATION
1400 73rd AVE NE
MINNEAPOLIS, MN 55432

TITLE WD-INTERCONNECTION

DWG NO. A030S864 | SHEET 5 of 7 | DWG SIZE D

PART NO.	DWG SIZE	DESCRIPTION OF MATERIAL	REF DES

PowerCommand™ MASTER CONTROL DMC1

SEE NOTE 7

TB26-C1

01	SHED	(TB26-C1-1)
02		(TB26-C1-2)
03	ADD	
04		(TB26-C1-4)
05		(TB26-C1-5)
06	SPARE	
07	SHED	(TB26-C1-7)
08		(TB26-C1-8)
09	SPARE	
10	ADD	
11		(TB26-C1-10)
12		(TB26-C1-11)
13	SHED	(TB26-C1-13)
14		(TB26-C1-14)
15	SPARE	
16	ADD	
17		(TB26-C1-16)
18		(TB26-C1-17)
19	SHED	(TB26-C1-19)
20		(TB26-C1-20)
21	SPARE	
22	ADD	
23		(TB26-C1-22)
24		(TB26-C1-23)
25	SHED	(TB26-C1-25)
26		(TB26-C1-26)
27	SPARE	
28	ADD	
29		(TB26-C1-28)
30		(TB26-C1-29)
31	SHED	(TB26-C1-31)
32		(TB26-C1-32)
33	SPARE	
34	ADD	
35		(TB26-C1-34)
36		(TB26-C1-35)
37	SHED	(TB26-C1-37)
38		(TB26-C1-38)
39	SPARE	
40	ADD	
41		(TB26-C1-40)
42		(TB26-C1-41)
43	SHED	(TB26-C1-43)
44		(TB26-C1-44)
45	SPARE	
46	ADD	
47		(TB26-C1-46)
48		(TB26-C1-47)

SEE NOTE 11

TB27-S1

01	COMMON	(TB27-S1-1)
02		(TB27-S1-2)
03		(TB27-S1-3)
04		(TB27-S1-4)
05		(TB27-S1-5)
06		(TB27-S1-6)
07		(TB27-S1-7)
08		(TB27-S1-8)
09		
10	SPARE	
11		(TB27-S1-11)
12	OVERCURRENT TRIP TOC 'A'	(TB27-S1-12)
13		(TB27-S1-13)
14		(TB27-S1-14)
15		
16	OVERCURRENT TRIP TOC 'A'	(TB27-S1-15)
17		(TB27-S1-16)
18	GND FAULT	(TB27-S1-17)
19	OVERCURRENT TRIP TOC 'A'	(TB27-S1-18)
20		(TB27-S1-19)
21		(TB27-S1-20)
22	GND FAULT	(TB27-S1-21)
23	OVERCURRENT TRIP TOC 'A'	(TB27-S1-22)
24		(TB27-S1-23)
25		(TB27-S1-24)
26	GND FAULT	(TB27-S1-25)
27	OVERCURRENT TRIP TOC 'A'	(TB27-S1-26)
28		(TB27-S1-27)
29		(TB27-S1-28)
30	GND FAULT	(TB27-S1-29)
31	OVERCURRENT TRIP TOC 'A'	(TB27-S1-30)
32		(TB27-S1-31)
33		(TB27-S1-32)
34	GND FAULT	(TB27-S1-33)
35	OVERCURRENT TRIP TOC 'A'	(TB27-S1-34)
36		(TB27-S1-35)
37		(TB27-S1-36)
38	GND FAULT	(TB27-S1-37)
39	OVERCURRENT TRIP TOC 'A'	(TB27-S1-38)
40		(TB27-S1-39)
41		(TB27-S1-40)
42	GND FAULT	(TB27-S1-41)
43		(TB27-S1-42)
44		

SEE NOTE 11

72-14 AWG CONTROL WIRES (DC)

SEE NOTE 11

FUTURE

TB-F1A

01	CLOSE	(TB26-C1-4)
02		(TB26-C1-5)
03	TRIP	(TB26-C1-1)
04		(TB26-C1-2)
05	AUX 'A'	(TB27-S1-1)
06	AUX 'B'	(TB27-S1-11)
07	OVERCURRENT TRIP TOC 'A'	(TB27-S1-12)
08		(TB27-S1-13)
09		(TB27-S1-14)
10	SPARE	
11		
12		
13		
14		

SEE NOTE 11

FUTURE

TB-F2A

01	CLOSE	(TB26-C1-10)
02		(TB26-C1-11)
03	TRIP	(TB26-C1-7)
04		(TB26-C1-8)
05	AUX 'A'	(TB27-S1-2)
06	AUX 'B'	(TB27-S1-15)
07	OVERCURRENT TRIP TOC 'A'	(TB27-S1-16)
08		(TB27-S1-17)
09	GND FAULT	(TB27-S1-18)
10	SPARE	
11		
12		
13		
14		

SEE NOTE 11

FUTURE

TB-F3

01	CLOSE	(TB26-C1-16)
02		(TB26-C1-17)
03	TRIP	(TB26-C1-13)
04		(TB26-C1-14)
05	AUX 'A'	(TB27-S1-3)
06	AUX 'B'	(TB27-S1-19)
07	OVERCURRENT TRIP TOC 'A'	(TB27-S1-20)
08		(TB27-S1-21)
09		
10	SPARE	
11		(TB27-S1-22)
12		
13		
14		

SEE NOTE 11

FUTURE

TB-F4

01	CLOSE	(TB26-C1-22)
02		
03	TRIP	(TB26-C1-19)
04		(TB26-C1-20)
05	AUX 'A'	(TB27-S1-4)
06	AUX 'B'	(TB27-S1-25)
07	OVERCURRENT TRIP TOC 'A'	(TB27-S1-24)
08		(TB27-S1-23)
09		
10	GND FAULT	(TB27-S1-26)
11	SPARE	
12		
13		
14		

SEE NOTE 11

FUTURE

TB-F5

01	CLOSE	(TB26-C1-28)
02		
03	TRIP	(TB26-C1-25)
04		(TB26-C1-26)
05	AUX 'A'	(TB27-S1-5)
06	AUX 'B'	(TB27-S1-27)
07	OVERCURRENT TRIP TOC 'A'	(TB27-S1-28)
08		(TB27-S1-29)
09		
10	GND FAULT	(TB27-S1-30)
11	SPARE	
12		
13		
14		

SEE NOTE 11

FUTURE

TB-F6

01	CLOSE	(TB26-C1-34)
02		
03	TRIP	(TB26-C1-31)
04		(TB26-C1-32)
05	AUX 'A'	(TB27-S1-6)
06	AUX 'B'	(TB27-S1-31)
07	OVERCURRENT TRIP TOC 'A'	(TB27-S1-32)
08		(TB27-S1-33)
09		
10	GND FAULT	(TB27-S1-34)
11	SPARE	
12		
13		
14		

SEE NOTE 11

FUTURE

TB-F7

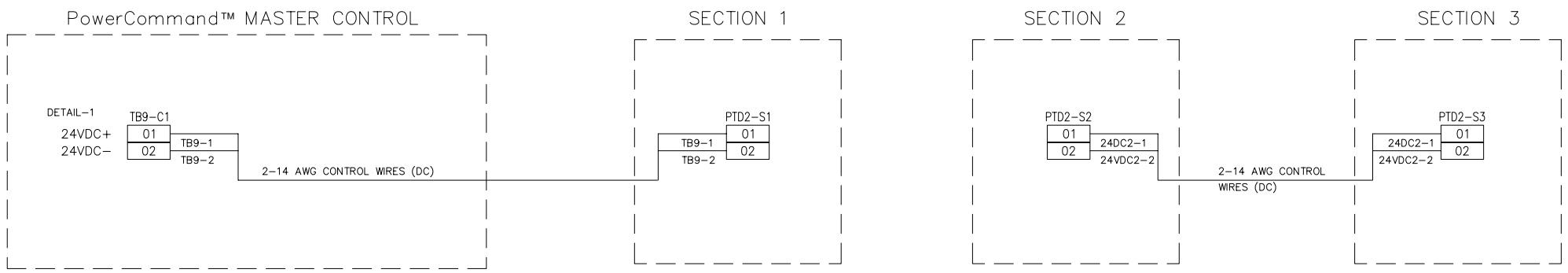
01	CLOSE	(TB26-C1-40)
02		(TB26-C1-41)
03	TRIP	(TB26-C1-37)
04		(TB26-C1-38)
05	AUX 'A'	(TB27-S1-7)
06	AUX 'B'	(TB27-S1-35)
07	OVERCURRENT TRIP TOC 'A'	(TB27-S1-36)
08		(TB27-S1-37)
09		
10	SPARE	
11		
12		
13		
14		

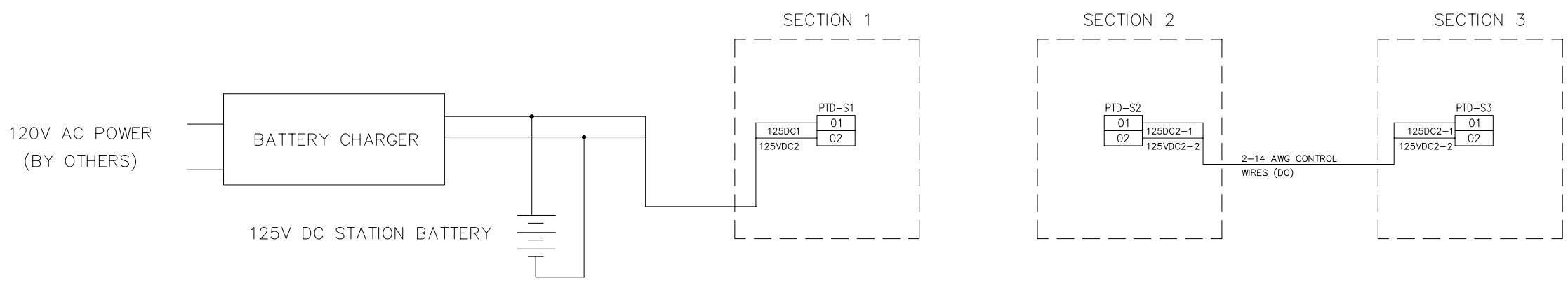
SEE NOTE 11

FUTURE

TB-F8

01	CLOSE	(TB26-C1-46)
02		(TB26-C1-47)
03	TRIP	(TB26-C1-43)
04		(TB26-C1-44)
05	AUX 'A'	(TB27-S1-8)
06	AUX 'B'	(TB27-S1-39)
07	OVERCURRENT TRIP TOC 'A'	(TB27-S1-40)
08		(TB27-S1-41)
09		
10	SPARE	
11		(TB27-S1-42)
12		
13		
14		





PC NO.	LTR	NO.	REVISION	ZONE	DRA	CHKR	APRV	DATE
PC104235	01	–	PRODUCTION RELEASE ASBUILT	–	VS	VS	KT	08/25/10

PROJECT:
ARECIBO OBSERVATORY SWITCHGEAR INTERCONNECTIONS
DISTRIBUTOR:
CUMMINS CARIBBEAN
7071681

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PART NO.	DWG SIZE	DESCRIPTION OF MATERIAL	REF DES

	NAME	DATE
DR	V.SIVAN	02/19/10
CHKR ☐ MFG ☐	V.SIVAN	02/19/10
APPROVED	K.TWUMASI	02/19/10

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ANSI Y14.5M-1982

MODEL FIRST USED ON
PCIL2004R-772F

SITE CODE
PGA

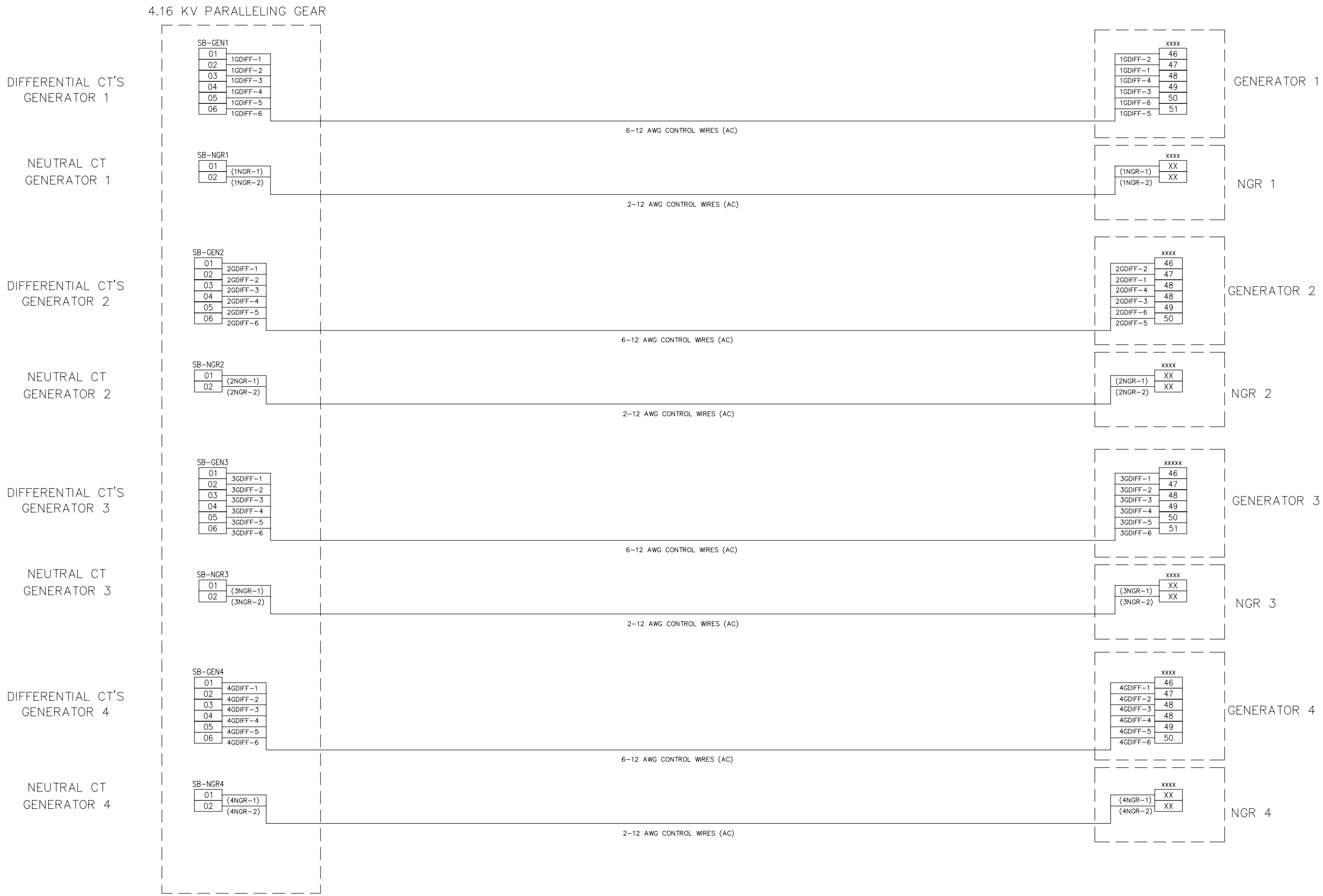
CUMMINS POWER GENERATION
1400 73rd AVE. NE
MINNEAPOLIS, MN 55432

TITLE
WD-INTERCONNECTION

DWG NO. A030S864

SHEET 6 OF 7

DWG SIZE D



PC NO.	LTR	NO.	REVISION	ZONE	DRA	CHKR	APRV	DATE
PC104235	01	–	PRODUCTION RELEASE ASBUILT	–	VS	VS	KT	08/25/10

PROJECT:
ARECIBO OBSERVATORY SWITCHGEAR

DISTRIBUTOR:
CUMMINS CARIBBEAN
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PART NO.	DWG SIZE	DESCRIPTION OF MATERIAL	REF DES

	NAME	DATE
DR	V.SIVAN	02/19/10
CHKR / MFG	V.SIVAN	02/19/10
APPROVED	K.TWUMASI	02/19/10

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ANSI Y14.5M-1982

MODEL FIRST USED ON PCIL2004R-772F

SITE CODE: PGA

CUMMINS POWER GENERATION
1400 73rd AVE.NE.
MINNEAPOLIS, MN 55432

TITLE: WD-INTERCONNECTION

DWG NO. A030S864 | SHEET 7 OF 7 | DWG SIZE D