

## RELAY & DEVICE NOMENCLATURE

27( ) UNDERVOLTAGE RELAY  
27BS-1,2 SYNCH UNDERVOLTAGE RELAY (HGA11J)  
50RE INSTANTANEOUS OVERCURRENT RELAY (MDPA730000BA)  
50/62BF BREAKER FAILURE RELAY (SBC223B1A)  
50/51AT-4 AUX TRANSFORMER PHASE FAULT RELAY (MPD200)  
51TN-2 AUX TRANSFORMER GROUND FAULT RELAY (PART OF 50/51AT-4)  
52G GENERATOR BREAKER  
59BN BUS GROUND DETECTOR RELAY (1FV51DD2A)  
59CM STARTING (CRANKING) MOTOR GROUND RELAY (1FV51KD\_A)  
86AT AUX POWER TRANSFORMER DIFF LOCKOUT RELAY (ELECTROSWITCH)  
86BF BREAKER FAILURE LOCKOUT RELAY (ELECTROSWITCH)  
86G1 GENERATOR LOCKOUT RELAY (ELECTROSWITCH)  
86G2 GENERATOR LOCKOUT RELAY (ELECTROSWITCH)  
86RE INADVERTANT ENERGIZATION LOCKOUT RELAY (ELECTROSWITCH)  
86T TRANSFORMER DIFF LOCKOUT RELAY (ELECTROSWITCH)  
86U UNIT DIFF LOCKOUT RELAY (ELECTROSWITCH)  
87T TRANSFORMER DIFFERENTIAL RELAY (ELECTROSWITCH)  
87U UNIT DIFFERENTIAL RELAY (ELECTROSWITCH)  
94BF1 BREAKER FAILURE RELAY (NGA15AC)  
96G( ) TRANSUDCER (G)=WATTS/VARS,  
(W)=WATTS  
(V)=VOLTAGE  
(R)=VARS



## DIGITAL GENERATOR PROTECTION (DGP)

24A/24T	VOLTS PER HETZ ALARM/TRIP
32-1	REVERSE POWER
40-1,40-2	LOSE OF EXCITATION
46A/46T	NEGATIVE SEQUENCE ALARM/TRIP
51V	SYSTEM PHASE FAULT BACKUP
59G	OVERVOLTAGE RELAY
64G1	GENERATOR STATOR GROUND FAULT
74( )	DGP ALARM OUTPUT CONTACT
81U-1/81O-1	UNDERFREQUENCY/OVERFREQUENCY
87G	GENERATOR DIFFERENTIAL RELAY (DGP)
94G( )	DGP TRIP OUTPUT CONTACT
VTF	VOLTAGE TRANSFORMER FUSE FAILURE















## EX2000 FUNCTIONS

AVR	AUTOMATIC VOLTAGE REGULATOR (AUTO)
FCR	FIELD CURRENT REGULATOR
OEL	OVER EXCITATION LIMIT
RCC	REACTIVE CURRENT COMPENSATION
UEL	UNDER EXCITATION LIMIT
V / HZ	VOLTS PER HERTZ LIMIT
24EX	EX2000 V / HZ ALARM / TRIP
30EX1	EX2000 GLOBAL ALARM OUTPUT RELAY
58EX	EX2000 DIODE FAULT MONITOR ALARM
59EX	EX2000 OVERVOLTAGE ALARM / TRIP
64F	EX2000 GENERATOR FIELD GROUND ALARM / TRIP
76EX	EX2000 OVER EXCITATION ALARM / TRIP
94EX1	EX2000 TRIP OUTPUT RELAY

### LEGEND

HMI	TURBINE CONTROL SYSTEM HUMAN MACHINE INTERFACE
LA	LIGHTING ARRESTER
SR	SPARE
GFR	GROUND FAULT RELAY
	G.E.
	<u>CUSTOMER</u> TERMINATION POINT

### EQUIPMENT LOCATION KEY

BD	BUS DUCT
EX	EX2000
F	FIRE PROTECTION PANEL
GV	GAS FUEL SKID
T	INLET AIR COMPT
	ACCESSORY (LUBE OIL) MODULE DEVICE
	CO2 FIRE PROTECTION SKID
	GE EQUIP MTD SEPERATE FROM PKG
	GENERATOR COMPT DEVICE
	GENERATOR CONTROL PANEL DEVICE
	GENERATOR NEUTRAL ACCESS COMPT (GNAC)
	MOTOR CONTROL CENTER (MCC)
	SWITCHGEAR
	TURBINE COMPT DEVICE
	TURBINE CONTROL PANEL DEVICE (TCP)
	PURCHASER'S EQUIPMENT
AP	AIR PROCESS SKID
APT	AUXILIARY POWER TRANSFORMER
DF	LIQUID (DIST) FUEL FWD SKID
MST	LUBE OIL VENT MIST SEPERATOR
WN	WATER INJECTION SKID
WW	WATER WASH SKID
DWN	DEMIN WATER FORWARDING SKID
CMT	STARING (CRANKING) MTR TRANSFORMER
	COOLING WATER SYSTEM
	CRANKING MOTOR CONTROLLER
	PACKAGE ELECTRICAL & ELECTRONIC CONTROL CENTER (PEECC)






## NOTES

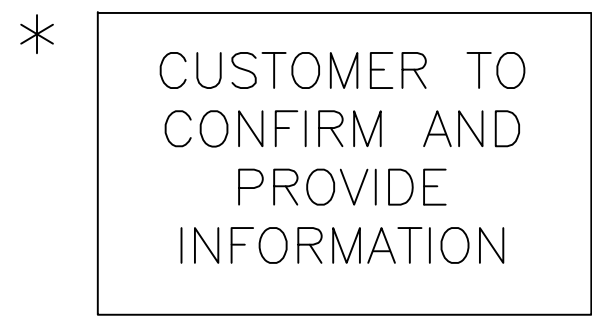
1. SEE AGM-02-0204-PLA-E-0006 (CABLE SUMMARY) MLI 0463, FOR INTERCONNECTING CABLE SCOPE OF SUPPLY.
2. CUSTOMER'S SYSTEM SHOULD NOT EXCEED 65000 AMPS RMS SYMMETRICAL SHORT CIRCUIT CURRENT AT THE MCC INCOMING TERMINALS. SEE AGM-02-0204-PLA-I-0046 (DEVICE SUMMARY) MLI 0414 TO VERIFY MOTOR AND HEATER RATINGS.
- 3a. GENERATOR DIGITAL MULTI-METER (GEN DMM) (NEXUS 1250) SELECTABLE DISPLAYS:
  - VOLTS
  - 3Ø PHASE-PHASE AND PHASE-NEUTRAL
  - AMPS 3Ø
  - FREQUENCY, MW, MVAR, PF, MVA, MVARHR, MWHR
  - 4-20mA OUTPUTS ARE FIELD CONFIGURABLE TO CURRENT, VOLTAGE, PF, VAR, MW AND/OR FREQUENCY
  - INCLUDED ONE MODULE OF 4 OUTPUTS
    - INCLUDED TWO MODULES TOTAL 8 OUTPUTS
    - INCLUDED THREE MODULES TOTAL 12 OUTPUTS
  - PULSE OUTPUTS ARE FIELD CONFIGURABLE, KYZ PULSE MODULE DEFAULT CONFIGURED FOR + & - KVARHRS.
- 3b. GENERATOR DIGITAL MULTI-METER (GEN DMM) (NEXUS 1250) SELECTABLE DISPLAYS:
  - VOLTS 3Ø PHASE-PHASE AND PHASE-NEUTRAL
  - AMPS 3Ø
  - FREQUENCY, MW, MVAR, PF, MVA, MVARHR, MWHR
  - PULSE OUTPUTS ARE FIELD CONFIGURABLE, KYZ PULSE MODULE DEFAULT CONFIGURED FOR + & - KVARHRS, KWHRS.
- 3c. AUXILIARY DIGITAL MULTI-METER (AUX-DMM) SELECTABLE DISPLAYS ARE SAME AS GEN DMM EXCEPT 50kW/KVAR HR PER PULSE.
- 3d. 4 TO 20mA ANALOG OUTPUTS FOR MW, MVAR, PR, FREQ AS WELL AS OTHER TURBINE PARAMETERS ARE AVAILABLE AS FIELD SELECTABLE OUTPUTS OUT OF THE TURBINE CONTROL PANEL; SEE MLI 4108.
4. GENERATOR PROTECTION REQUIRES (3) NORMALLY OPEN AND (3) NORMALLY CLOSED CONTACTS FOR 52G STATUS.
5. VT'S ARE NON-DRAWOUT.
6. ALL LOCKOUT RELAY (86) FUSES ARE MONITORED BY ALARM TO TURBINE CONTROL PANEL. THE 124VDC GENERATOR PANEL POWER SUPPLY IS MONITORED BY ALARM IN THE TURBINE CONTROL PANEL.
7. THE CRITICAL CONTACT OF THE DGP WILL INITIATE A SIGNAL TO BEGIN NORMAL SHUTDOWN. HOWEVER, IF THERE IS A BACKUP GENERATOR PROTECTION (DGP/SR489/BECKWITH), NORMAL SHUTDOWN WILL OCCUR ONLY WHEN BOTH DGP AND BACKUP FAIL.
8. CT'S ARE C800 CLASS.
9. THIS DRAWING REFLECTS THE ORIGINAL UNIT SPECIFIC DRAWING 194D6865 (PROVIDED BY CUSTOMER) AND INCLUDES DETAILS FOR DUAL FUEL MODIFICATION PER CUSTOMER SCOPE OF WORK.







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△	30/06/11	ISSUED FOR REVIEW		SAB	CB TK
REV.	FECHA	REVISIONES O MODIFICACIONES	DIBUJO	REVISO	APROBADO

REF. FABRICANTE		
REF. FABRICANTE	FABRICANTE	O/C:

AGM-02-0204-PLA-E-0043	WATER INJECTION SKID - ELECTRICAL		
AGM-02-0204-PLA-E-0040	DEMIN WATER FORWARDING SKID - ELECTRICAL		
AGM-02-0204-PLA-E-0036	LIQUID FUEL FORWARDING SKID - ELECTRICAL		
36181491	ASSY. REMOTE CONTROL SYS (MLI 4108)		
AGM-02-0204-PLA-I-0046	DEVICE SUMMARY		
AGM-02-0204-PLA-E-0006	CABLE SUMMARY		
N° DE DOCUMENTO	DESCRIPCIÓN	REV.	FECHA
DOCUMENTOS DE REFERENCIA			

 		  	
<b>AMPLIACIÓN DE LA CAPACIDAD DE GENERACIÓN Y TRANSPORTE DE ELECTRICIDAD EN LA ISLA DE MARGARITA</b>			
<b>ONE LINE DIAGRAM</b>			
<b>DUAL FUEL MOD. UNITS 298034 + 298035 (MU 0444)</b>			
PLANO N°:	REV:	PROYECTO:	PLANO No.:
PROYECTO N°:		ESCALA:	
409-2986-1		NONE	
CALCULO:		FECHA:	AGM-02-0204-PLA-E-0008
REVISADO: C. Brown		DISEÑO: N°	
DIBUJO: S. Boerckel		ESC./PLTADO:	
APROBADO: T. Kooztz		ARCHIVO:	
ARCHIVO:		APROBADO: M. Monticelli	
		PAGINA: 1 DE: 6	REV. A

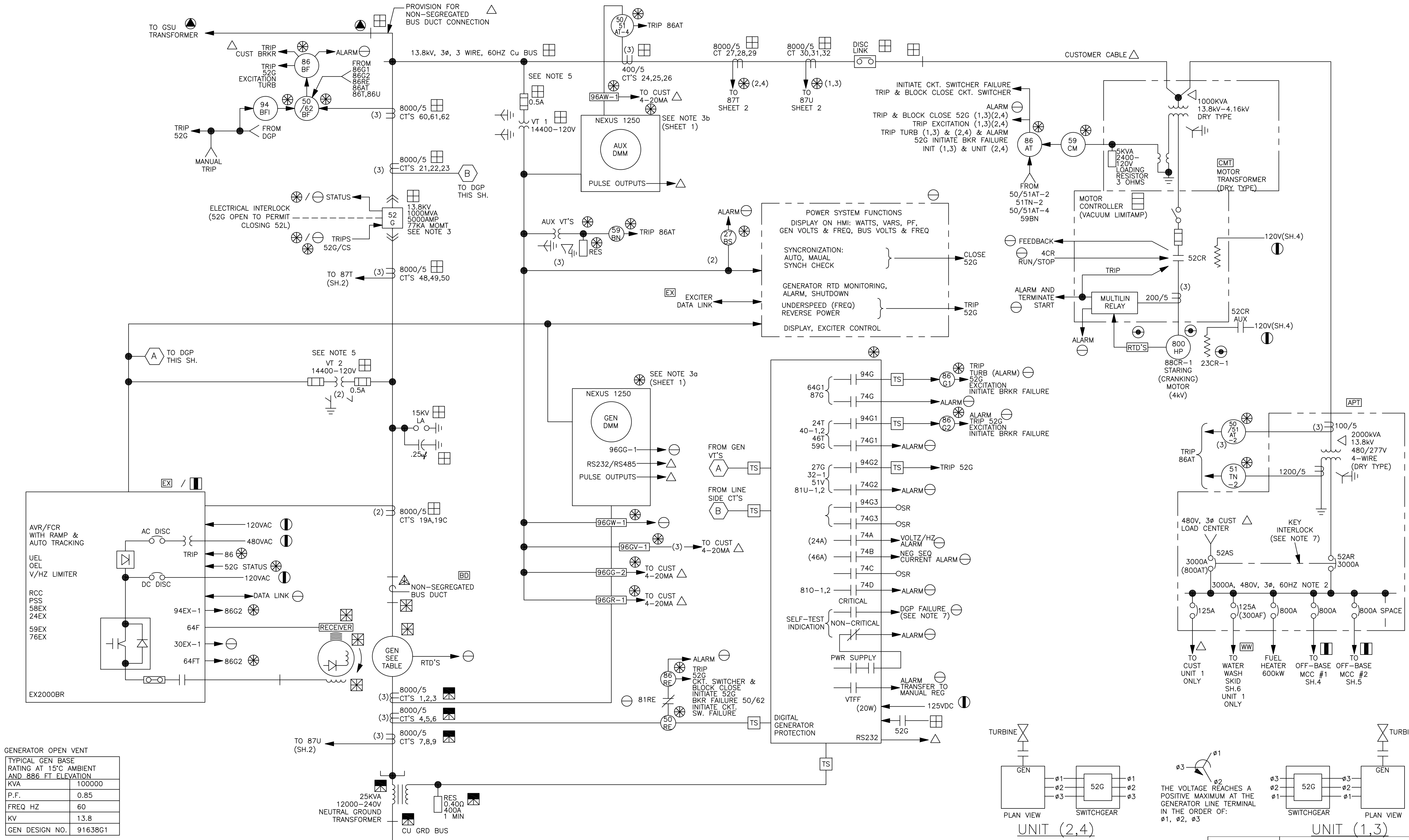
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<p>AMPLIACIÓN DE LA CAPACIDAD DE GENERACIÓN Y TRANSPORTE DE ELECTRICIDAD EN LA ISLA DE MARGARITA</p> <p align="center"><b>ONE LINE DIAGRAM</b></p> <p align="center"><b>DUAL FUEL MOD. UNITS 298034 &amp; 298035</b></p> <p align="center"><b>(MLJ 0444)</b></p>		<p>GERENCIA GENERAL DE INGENIERÍA Y PROYECTOS</p>	
PLANO N°:	REV:		
PROYECTO N°: 409-2956-1			
CALCULO:	PROYECTO:	ESCALA:	PLANO No:
REVISADO: C. Brown	REVISADO:	FECHA: 30/06/11	AGM-02-0204-PLA-E-0008
DIBUJO: S. Boerckel	CALCULO: J. Castillo	DISC. N°:	
APROBADO: T. Koontz	DIBUJO:	ESC./PROTOS:	
ARCHIVO:	APROBADO: M. Monticelli	ARCHIVO:	PAGINA: 2 DE: 6
			REV. 

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△	30/06/11	ISSUED FOR REVIEW	SAB	CB	TK
REV.	FECHA	REVISIONES O MODIFICACIONES	DIBUJO	REVISO	APROBO

REF. FABRICANTE		
REF. FABRICANTE	FABRICANTE	O/C:





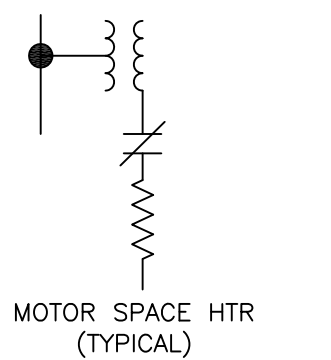
GENERATOR OPEN VENT

TYPICAL GEN BASE RATING AT 15°C AMBIENT AND 886 FT ELEVATION	
KVA	100000
P.F.	0.85
FREQ HZ	60
KV	13.8
GEN DESIGN NO.	91638G1







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REF. FABRICANTE	FABRICANTE	O/C:

REV.	FECHA	REVISIONES O MODIFICACIONES	DIBUJO	REVISO	APROBO
30/06/11	ISSUED FOR REVIEW		SAB	CB	TK

AGM-02-0204-PLA-E-0043 WATER INJECTION SKID - ELECTRICAL					
AGM-02-0204-PLA-E-0040 DEMIN WATER FORWARDING SKID - ELECTRICAL					
AGM-02-0204-PLA-E-0036 LIQUID FUEL FORWARDING SKID - ELECTRICAL					
36181491 ASSY, REMOTE CONTROL SYS (MLI 4108)					
AGM-02-0204-PLA-I-0046 DEVICE SUMMARY					
AGM-02-0204-PLA-E-0006 CABLE SUMMARY					
N° DE DOCUMENTO	DESCRIPCION	REV	FECHA		
DOCUMENTOS DE REFERENCIA					
<div><div>DERWICK</div><div>ProEnergy</div><div>CORPOELEC</div><div>SENECA</div></div>					
AMPLIACIÓN DE LA CAPACIDAD DE GENERACIÓN Y TRANSPORTE DE ELECTRICIDAD EN LA ISLA DE MARGARITA					
ONE LINE DIAGRAM					
DUAL FUEL MOD. UNITS 298034 & 298035 (MLI 0444)					
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409-2956-1		409-2956-1	NONE	30/06/11	AGM-02-0204-PLA-E-0008
REVISADO: C. Brown	CALCULO:	FECHA:	DISK N°	ESC./PLOTEO:	
DIBUJO: S. Boerckel	REVISADO: J. Castillo				
APROBADO: T. Koontz	DIBUJO:	ARCHIVO:			
ARCHIVO:	APROBADO: M. Monticelli	ARCHIVO:	PAGINA: 3	DE: 6	REV: A



NOTE:  
SEE AGM-02-0204-PLA-I-0046  
(DEVICE SUMMARY) MLI 0414 TO  
VERIFY MOTOR AND HEATER RATING.

 		  	
PLANO N°:  REV:		AMPLIACIÓN DE LA CAPACIDAD DE GENERACIÓN Y TRANSPORTE DE ELECTRICIDAD EN LA ISLA DE MARGARITA <b>ONE LINE DIAGRAM</b> <b>DUAL FUEL MOD. UNITS 298034 &amp; 298035</b> <b>(MLJ 0444)</b>	
		PROYECTO: ESCALA: NONE FECHA: 30/06/11 DISK. N°	
		PLANO No: AGM-02-0204-PLA-E-0008	
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CALCULO: REVISADO: C. Brown DIBUJO: S. Boerckel APROBADO: T. Koontz ARCHIVO:		PROYECTO: CALCULO: REVISADO: J. Castillo DIBUJO: ESC./PLOTEO: ARCHIVO: M. Monticelli	

REF. FABRICANTE		
REF. FABRICANTE	FABRICANTE	O/C:

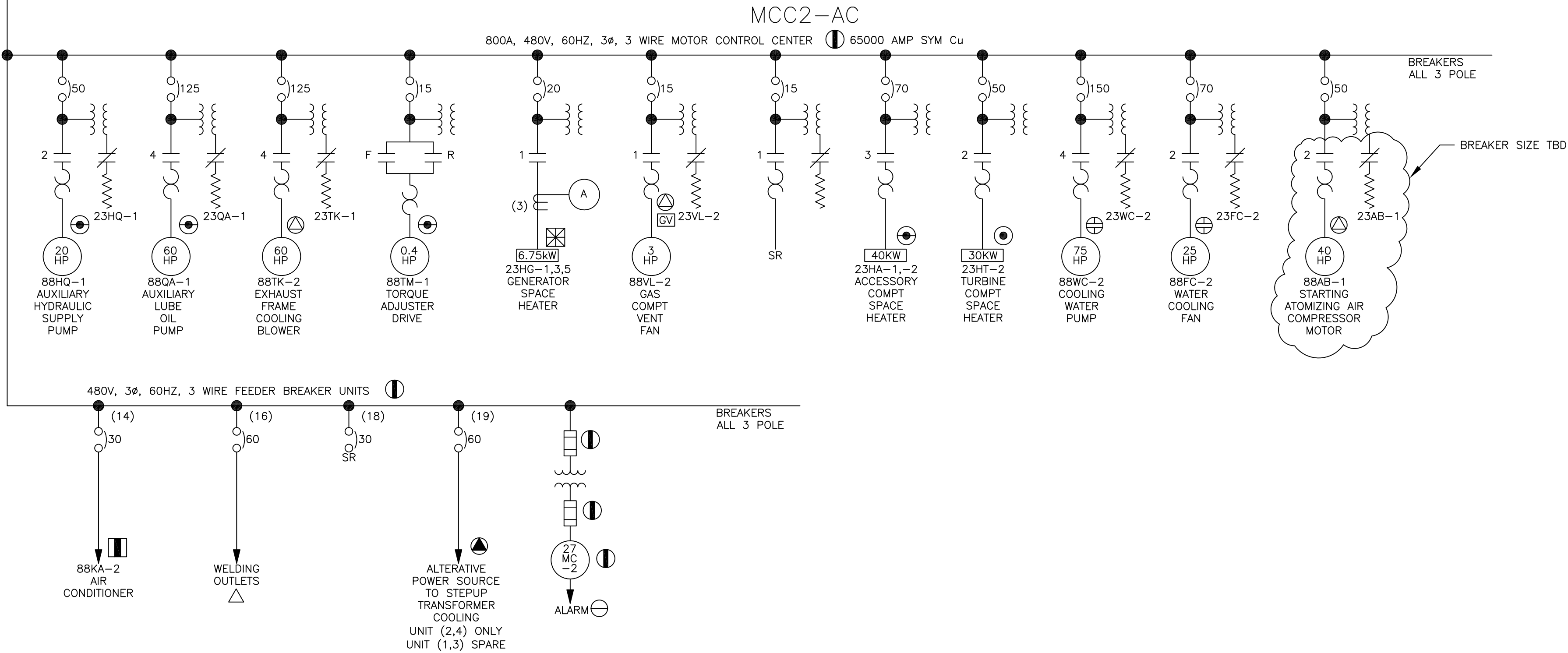


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LINEA DE CORTE DE COPIA

AGM-02-0204-PLA-E-0008  
N° PLANO:

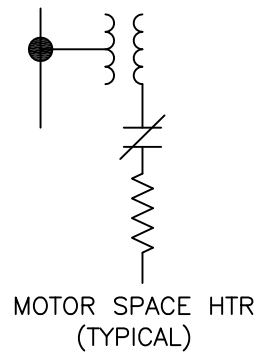
IMPORTANTE  
ESTE PLANO FUE ELABORADO EN AUTOCAD V.2008  
CUALQUIER MODIFICACION REALIZADA EN CAMPO  
DEBERA SER NOTIFICADO A LA UNIDAD  
RESPONSABLE.  
QUEDA PROHIBIDO CORREGIR ESTE PLANO SIN  
AUTORIZACION DE ESTA UNIDAD.

APT  
FROM AUX POWER  
800A BREAKER SHEET 3

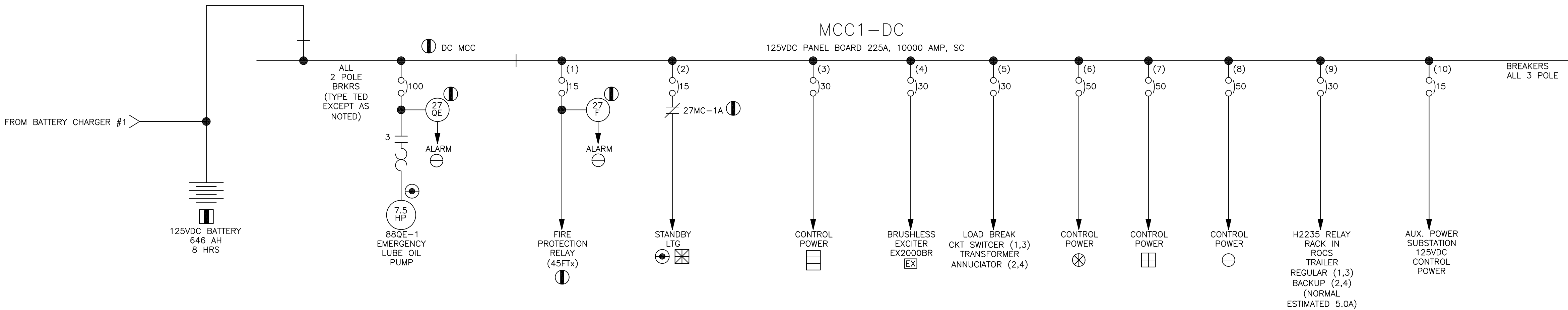


3φ BRKRS 65KA	SPECTRA TYPE
0-10A	SEL(I)
15-150A	SEL(T)
175-250A	SEL(T)

(I) INSTANTANEOUS  
MAG. ONLY  
(T) THERMAL MAG



NOTE:  
SEE AGM-02-0204-PLA-I-0046  
(DEVICE SUMMARY) MLI 0414 TO  
VERIFY MOTOR AND HEATER RATING.



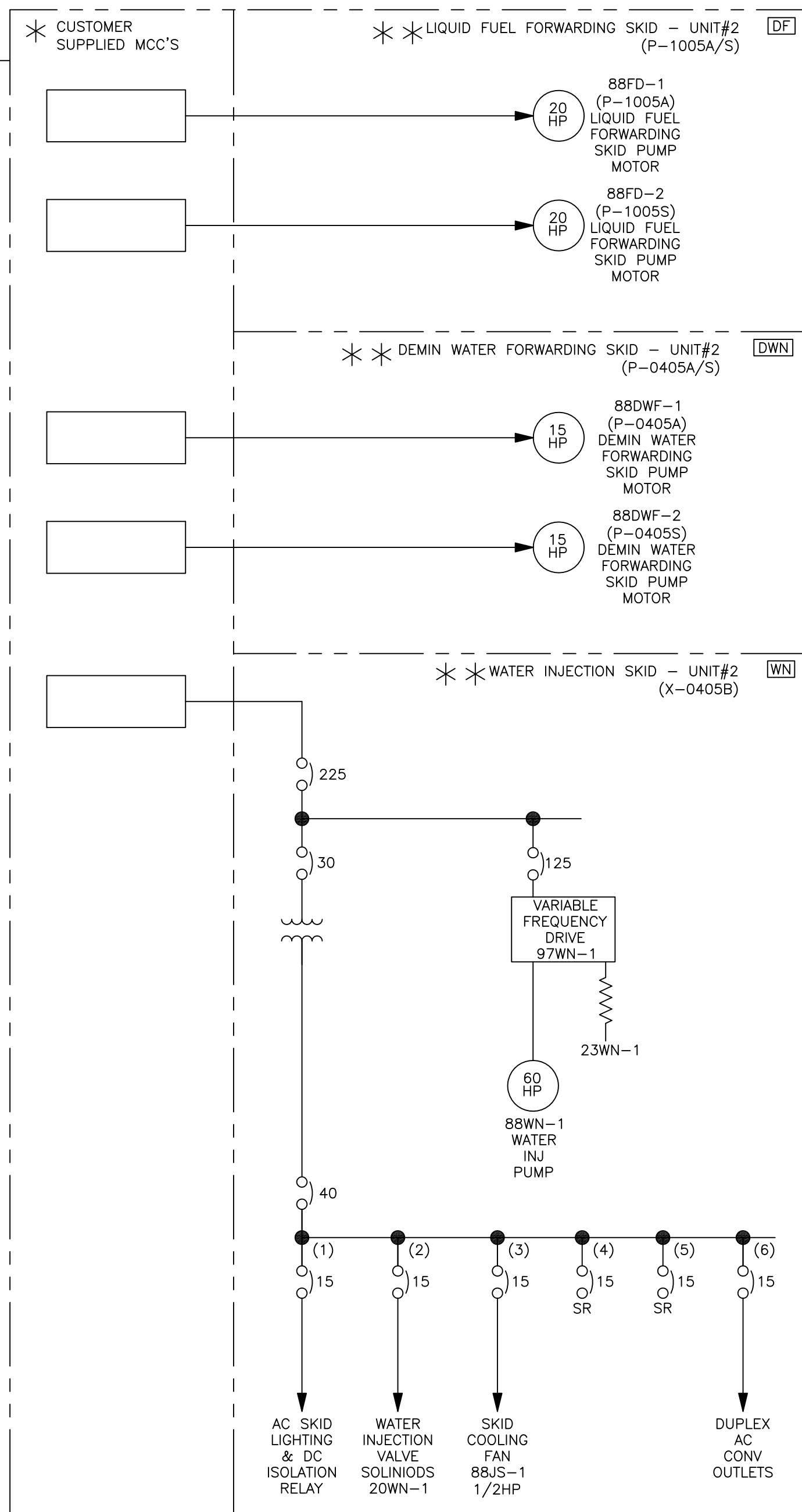
AGM-02-0204-PLA-E-0043	WATER INJECTION SKID - ELECTRICAL		
AGM-02-0204-PLA-E-0040	DEMIN WATER FORWARDING SKID - ELECTRICAL		
AGM-02-0204-PLA-E-0036	LIQUID FUEL FORWARDING SKID - ELECTRICAL		
36181491	ASSY, REMOTE CONTROL SYS (MLI 4108)		
AGM-02-0204-PLA-I-0046	DEVICE SUMMARY		
AGM-02-0204-PLA-E-0006	CABLE SUMMARY		
N° DE DOCUMENTO	DESCRIPCIÓN	REV.	FECHA
DOCUMENTOS DE REFERENCIA			

DERWICK	ProEnergy	CORPOELEC	Electricidad de Caracas	AGENCIA NACIONAL DE INGENIERIA Y PROTECTOS	SENECA
AMPLIACIÓN DE LA CAPACIDAD DE GENERACIÓN Y TRANSPORTE DE ELECTRICIDAD EN LA ISLA DE MARGARITA					
ONE LINE DIAGRAM					
DUAL FUEL MOD. UNITS 298034 & 298035 (MLI 0444)					
PLANO N°:	REV:	PROYECTO N°:	ESCALA:	PLANO No:	
409-2956-1		409-2956-1	NONE	30/06/11	AGM-02-0204-PLA-E-0008
REVISADO: C. Brown	CALCULO: J. Castillo	FECHA: 30/06/11	DISK N°		
DIBUJO: S. Boerckel	REVISADO: J. Castillo	ESC./PLOTED:			
APROBADO: T. Koontz	APROBADO: M. Monticelli	ARCHIVO:		PAGINA: 5 DE: 6	REV. A

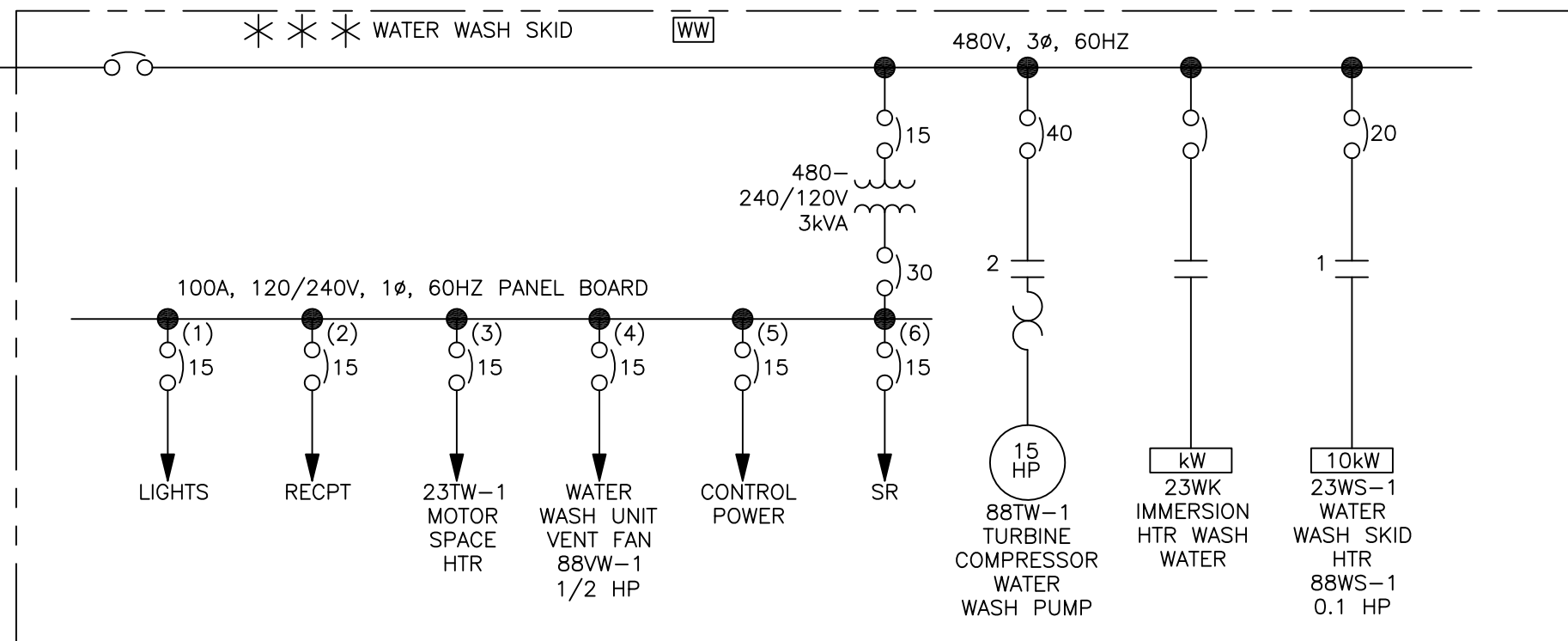
REV.	FECHA	REVISIONES O MODIFICACIONES	DIBUJO	REVISO	APROBO
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REF. FABRICANTE		
REF. FABRICANTE	FABRICANTE	O/C:






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LINEA DE CORTE DE ORIGINAL



APT  
FROM AUX POWER  
BREAKER SHEET 3



\* \* \* FIGURE ABOVE IS SHOWN TO DEFINE INTERFACE AND LOADING FOR POWER SOURCE SIZING. EITHER FUSES OR CURCUIT BREAKERS MAY BE SUPPLIED. SEE AGM-02-0204-PLA-I-0046 (DEVICE SUMMARY) MLI 0414, AND SKID DRAWINGS, MLI E025, FOR DETAILS.

AGM-02-0204-PLA-E-0043	WATER INJECTION SKID - ELECTRICAL								
AGM-02-0204-PLA-E-0040	DEMIN WATER FORWARDING SKID - ELECTRICAL								
AGM-02-0204-PLA-E-0036	LIQUID FLUID FORWARDING SKID - ELECTRICAL								
3618149	ASSY, REMOTE CONTROL SYS (MLJ 4108)								
AGM-02-0204-PLA-I-0046	DEVICE SUMMARY								
AGM-02-0204-PLA-E-0006	CABLE SUMMARY								
N° DE DOCUMENTO	DESCRIPCIÓN							REV.	FECHA
DOCUMENTOS DE REFERENCIA									
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AMPLIACIÓN DE LA CAPACIDAD DE GENERACIÓN Y TRANSPORTE DE ELECTRICIDAD EN LA ISLA DE MARGARITA									
<b>ONE LINE DIAGRAM</b>									
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PLANO N°:	REV:	PROYECTO:	ESCALA:	NO. PLANO:					
409-2956-1		CALCULO:	NONE	30/06/11	AGM-02-0204-PLA-E-0008				
REVISADO: C. Brown		REVISADO:	FECHA:						
DEBILDO: S. Berckel		REVISADO: J. Castillo	IDEN. N°						
APROBADO: T. Koontz		DEBILDO:	ESC./PLOTEO:						
ARCHIVO:		APROBADO: M. Monticelli	ARCHIVO:	PAGINA: 6 DE: 6	REV. 