

GAS TURBINE PROPOSAL ONELINE

GENERAL g ELECTRIC

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EQUIPMENT LOCATION KEY

NOMENCLATURE & DESCRIPTION

SYMBOLS	LOCATION	NOMENCLATURE	DESCRIPTION	RELAY
	PURCHASER'S EQUIPMENT	21	PHASE DISTANCE	G60
	GENERATOR PROTECTION PANEL (GPP)	24	VOLTS PER HERTZ	G60, T60
	MOTOR CONTROL CENTER (MCC)	32	SENSITIVE DIRECTIONAL POWER	G60
	GENERATOR TERMINAL ENCLOSURE (GTE)	40	LOSS OF EXCITATION	G60
	TURBINE CONTROL PANEL (TCP)	46	GENERATOR UNBALANCE (NEG SEQUENCE)	G60
	EXCITATION COMPARTMENT WITHOUT HIGH VOLTAGE (EC)	78	OUT OF STEP (LOSS OF SYNCH)	G60
	LCI / EXCITATION COMPARTMENT	81	FREQUENCY	G60
	GE EQUIPMENT SEPARATELY MOUNTED	27P	PHASE UNDERVOLTAGE	G60
	GENERATOR COMPARTMENT	27TN	3RD HARMONIC NEUTRAL UNDERVOLTAGE (GND PROTECTION)	G60
	PACKAGE ELECTRICAL AND ELECTRONIC CONTROL CENTER (PEECC)	50/27	INADVERTENT ENERGIZATION	C60, G60
	TURBINE BASE	50/51	PHASE OVERCURRENT	T60
	COOLING WATER SYSTEM	50/51(AT4)	AUX BUS OVERCURRENT RELAY	C60
	CO2 FIRE PROTECTION SKID	50/62BF	BREAKER FAILURE WITH TIMER	C60
	LOAD SHAFT COMPARTMENT	50BF	BREAKER FAILURE (FOR RETRIP)	C60
	EXCITER PANEL	51PV	PHASE TIME OVERCURRENT, VOLTAGE RESTRAINED	G60
	EXCI	51TN	GENERATOR XFMR NEUTRAL OVERCURRENT RELAY	T60
	LOAD COMMUTATED INVERTER	41AC	EXCITATION TRANSFORMER SUPPLY BREAKER	MISC
	ISOLATION TRANSFORMER	52G	GENERATOR CIRCUIT BREAKER	MISC
	DC LINK REACTOR	52L	HIGH SIDE LINE CIRCUIT BREAKER	MISC
	EXCITATION TRANSFORMER (PPT)	52SS	STATIC START SUPPLY BREAKER	MISC
	AC LINK REACTOR	59BN	BUS GROUND DETECTION	C60
	ACCESSORY MODULE - LUBE OIL MODULE	59N	OVERVOLTAGE, NEUTRAL (GND PROTECTION)	G60
	LIQUID FUEL / ATOMIZER AIR MODULE	59P	PHASE OVERVOLTAGE	G60
	DISTILLATE FUEL FORWARDING SKID	63PT	TRANSFORMER FAULT PRESSURE SWITCH RELAY	MISC
	WATER INJECTION SKID (NOX)	63PTX	AUX. CONTACT TO LATCH CLOSE ON 63PT INPUT	T60
	FIRE PROTECTION PANEL	86BF	BREAKER FAILURE LOCKOUT RELAY	MISC
	TURBINE AIR INLET COMPARTMENT	86G-1A	GENERATOR LOCKOUT RELAY	MISC
	ACCESSORY MODULE - GAS VALVE AREA	86G-2A	GENERATOR LOCKOUT RELAY	MISC
	EVAPORATIVE COOLER SKID	86IE	INADVERTENT ENERGIZATION LOCKOUT RELAY	MISC
	WATER WASH SKID			
	GAS AUXILIARY MONITORING PANEL (GAMP)			
	ACCESSORY BASE			
	AIR PROCESS SKID			

EXCITER FUNCTIONS

24EX	VOLT/HERTZ ALARM/TRIP
26EX	BRIDGE OVER TEMP ALARM/TRIP
40EX	LOSS OF EXCITATION TRANSFER/TRIP
47EX	BRIDGE AC PHASE UNBALANCE ALARM/TRIP
59EX	OVERVOLTAGE ALARM/TRIP
64EX	FIELD GROUND DETECTION
76EX	OVER EXCITATION ALARM/TRANSFER
AVR	AUTOMATIC VOLTAGE REGULATOR
FCR	FIELD CURRENT REGULATOR
FVR	FIELD VOLTAGE REGULATOR
OEL	OVER EXCITATION LIMIT
PSS	POWER SYSTEM STABILIZER
RCC	REACTIVE CURRENT COMPENSATOR
UEL	UNDER EXCITATION LIMIT
V/Hz	VOLTS PER HERTZ LIMIT

LEGEND

HMI	TURBINE CONTROL SYSTEM HUMAN MACHINE INTERFACE	G60	GENERATOR MANAGEMENT RELAY
GSU	GENERATOR STEP-UP TRANSFORMER	T60	TRANSFORMER MANAGEMENT RELAY
IBF	INITIATE BREAKER FAILURE	C60	BREAKER MANAGEMENT RELAY
TS	TEST SWITCH	GEN DMM	GENERATOR DIGITAL MULTIMETER
LA	LIGHTNING ARRESTER	CLF	CURRENT LIMITING FUSE
SR	SPARE		

 CUSTOMER
GE TERMINATION POINT

NOTES:

POWER CABLES: ALL POWER CABLES FROM CUSTOMER EQUIPMENT TO GE EQUIPMENT AND BETWEEN GE PROVIDED EQUIPMENT IS BY CUSTOMER UNLESS SPECIFICALLY MARKED AS GE.

CT POLARITY & GROUNDING: CURRENT TRANSFORMER CONNECTION TO THE RELAYS DO NOT INDICATE THEIR POLARITY OR GROUNDING DETAILS.

52G STATUS AUX CONTACTS: GENERATOR PROTECTION REQUIRES (5) NORMALLY OPEN AND (3) NORMALLY CLOSED CONTACTS FOR 52G STATUS.

LOCKOUT RELAY:

ALL LOCKOUT RELAY (86) FUSES ARE MONITORED BY ALARM TO TURBINE CONTROL PANEL. THE 125VDC GENERATOR PANEL POWER SUPPLY IS MONITORED BY ALARM IN THE TURBINE CONTROL PANEL. ON ALL 7 DECK LOCKOUT RELAYS 1 DECK WILL BE WIRED AS SPARE FOR CUSTOMER USE. ON ALL 10 DECK LOCKOUT RELAYS 3 DECKS WILL BE WIRED AS SPARE FOR CUSTOMER USE. TRANSFORMER AND BREAKER FAILURE LOCKOUT RELAYS ARE 10 DECK. ALL OTHER LOCKOUT RELAYS ARE 7 DECK. ALL LOCKOUT RELAYS SHOWN ON THE ONELINE ARE LOCATED PHYSICALLY IN THE GENERATOR PROTECTION PANEL UNLESS THEY SHOWN TO BE LOCATED ELSEWHERE.

27TN RELAY SETTING: THESE SETTINGS WILL NOT BE PROVIDED WITH THE INITIAL RELEASE OF THE RELAY SETTINGS DRAWING. THIS RELAY WILL BE SET ONLY AFTER THE MACHINE IS RUN AND 3RD HARMONIC VOLTAGE DATA IS AVAILABLE FROM SITE.

RELAY SETTINGS AND CONFIGURATION: TYPICALLY, GE SETS THE GENERATOR PROTECTION RELAY ONLY. THE TRANSFORMER PROTECTION AND BUS PROTECTION RELAY ARE NOT SET BY GE. ALL THE RELAYS SHOULD BE CONFIGURED PER RELAY CONFIGURATIONS SHOWN IN THIS DRAWING, IRRESPECTIVE OF WHO SETS THE RELAYS.

GEN PROTECTION FAILURE IN GAS TURBINES: THE CRITICAL CONTACT OF THE G60 WILL INITIATE A NORMAL SHUTDOWN VIA TCP.

BREAKER FAILURE RETRIP RELAY CONFIGURATION: DO NOT CONFIGURE FUNCTION 50BF TO OUTPUT P1 ON THE C60 RELAY. DOING SO WILL RESULT IN A NUISANCE ALARM WHENEVER THE BREAKER TRIPS AND INITIATES A BREAKER FAILURE RETRIP.

IMPACT OF STATIC START ON 87T: FOR APPLICATION WHERE T60 RELAY RECEIVES INPUT FROM CTS THAT WILL SEE CURRENT ASSOCIATED WITH STATIC START (UNIT DIFFERENTIAL PROTECTION), THE T60 RELAY MUST HAVE 2 SELECTABLE SETTINGS, ONE FOR STARTUP, ONE FOR NORMAL RUN CONDITIONS, TCP CONTACT 87TSSX IS USED TO SELECT THE STARTUP SETTINGS AND REVERT (DEFAULT) BACK TO THE NORMAL SETTING WHEN THE UNIT IS NOT STARTING.(I.E. TCP SIGNAL NOT PRESENT)

TEST SWITCHES: ALL TEST SWITCHES WIRED TO THE GENERATOR PROTECTION RELAYS ARE ALSO LOCATED WITH THEM IN THE GENERATOR PROTECTION PANEL.

MCC SHORT CIRCUIT REQUIREMENT: CUSTOMER'S SYSTEM SHOULD NOT EXCEED 65,000 AMPS RMS SYMMETRICAL SHORT CIRCUIT CURRENT AT THE MCC INCOMING TERMINALS. MOTOR AND HEATER RATINGS SHOWN IN THIS SKETCH WILL BE UPDATED TO ACTUAL RATINGS DURING REQUISITION.

INCOMING CABLE CONNECTION TO MCC:INCOMING CABLE TO MCC SHALL TERMINATE ON COPPER BUS BARS. CABLE MUST UTILIZE STANDARD CABLE CONNECTOR FOR TERMINATION.

52SS CONTROL: AUTOMATIC CONTROL OF THE 52SS FEEDER BREAKER IS FROM THE STATIC STARTER. 52SS CAN BE CYCLED AFTER EACH STATIC START OR KEPT CLOSED FOR EXTENDED PERIOD OF TIME BY APPROPRIATE OPTION SELECTION AT THE TURBINE CONTROLLER HUMAN - MACHINE INTERFACE. 52SS CAN BE TRIPPED FROM ANY EXTERNAL LOCATION OF CUSTOMER'S CHOICE INDEPENDENT OF THE AUTOMATIC CONTROL IN STATIC STARTER. IT IS, HOWEVER, GE'S PRACTICE TO CLOSE 52SS ONLY FROM THE STATIC STARTER AS A PART OF STARTUP PROCESS AND NOT FROM ANY OTHER EXTERNAL LOCATION.

STATIC START PRE-TRIP: ANY DEVICE THAT TRIPS THE ISOLATION TRANSFORMER SUPPLY POWER (SUCH AS 86SS) WHILE THE STATIC STARTER IS OPERATING SHOULD BE GROUPED IN TO THE PRE-TRIP NORMALLY CLOSED CONTACT STRING. THIS STRING SHOULD BE WIRED IN SERIES WITH THE 52SS STATUS CONTACT AND WIRED INTO THE STATIC START.

STARTING MULTIPLE TURBINES: UNDER NO CONDITION CAN TWO UNITS BE STARTED FROM THE SAME STATIC STARTER AT THE SAME TIME. THE STATIC START EQUIPMENT IS RATED TO SUPPORT UNLIMITED NUMBER OF CONSECUTIVE STARTUPS. EXTERNAL ELECTRICAL INTERLOCKS SHOULD PREVENT MORE THAN ONE GENERATOR FROM GETTING CONNECTED TO THE STATIC STARTER.

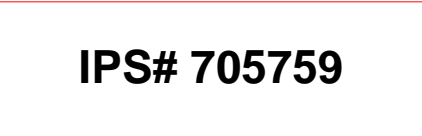
STATIC START FEEDER PROTECTION: TYPICALLY, CUSTOMER IS EXPECTED TO PROTECT THE STATIC START FEEDER (52SS TO ISOLATION XFMR) FOR OVERCURRENT AND GROUND FAULT.

COOLING WATER: COOLING WATER MUST BE SUPPLIED TO THE STATIC STARTER HEAT EXCHANGER WHENEVER THE STATIC STARTER IS IN OPERATION

AUX BUS TRANSFORMER SIZING RECOMMENDATION: RECOMMENDED MINIMUM SHORT CIRCUIT AVAILABLE ON THE CUSTOMER'S AUXILIARY BUS IS 200MVA. REDUCED AMOUNTS OF BUS KVA WILL RESULT IN INCREASED LEVELS OF VOLTAGE AND CURRENT DISTORTION, REFERENCE IEEE 519 - HARMONIC CONTROL AND REACTIVE COMPENSATION OF STATIC POWER CONVERTERS FOR ADDITIONAL INFORMATION.

STATIC START CIRCUIT BREAKER / CABLE SIZING CRITERIA: THE STATIC START LOAD IMPOSED ON THE POWER SYSTEM IS 5450 KVA STEADY STATE AND 8000 KVA TRANSIENTLY FOR 2 MINUTES EACH START. THE STATIC START COMPONENTS ARE DESIGNED TO MEET THIS DUTY CYCLE WITHOUT RESTRICTION TO A NUMBER OF REPEATED BACK TO BACK STARTS. THE CIRCUIT BREAKER & CABLES THAT CONNECT THE STATIC STARTER TO THE POWER SOURCE SHOULD BE SIZED BASED ON THIS REQUIREMENT.

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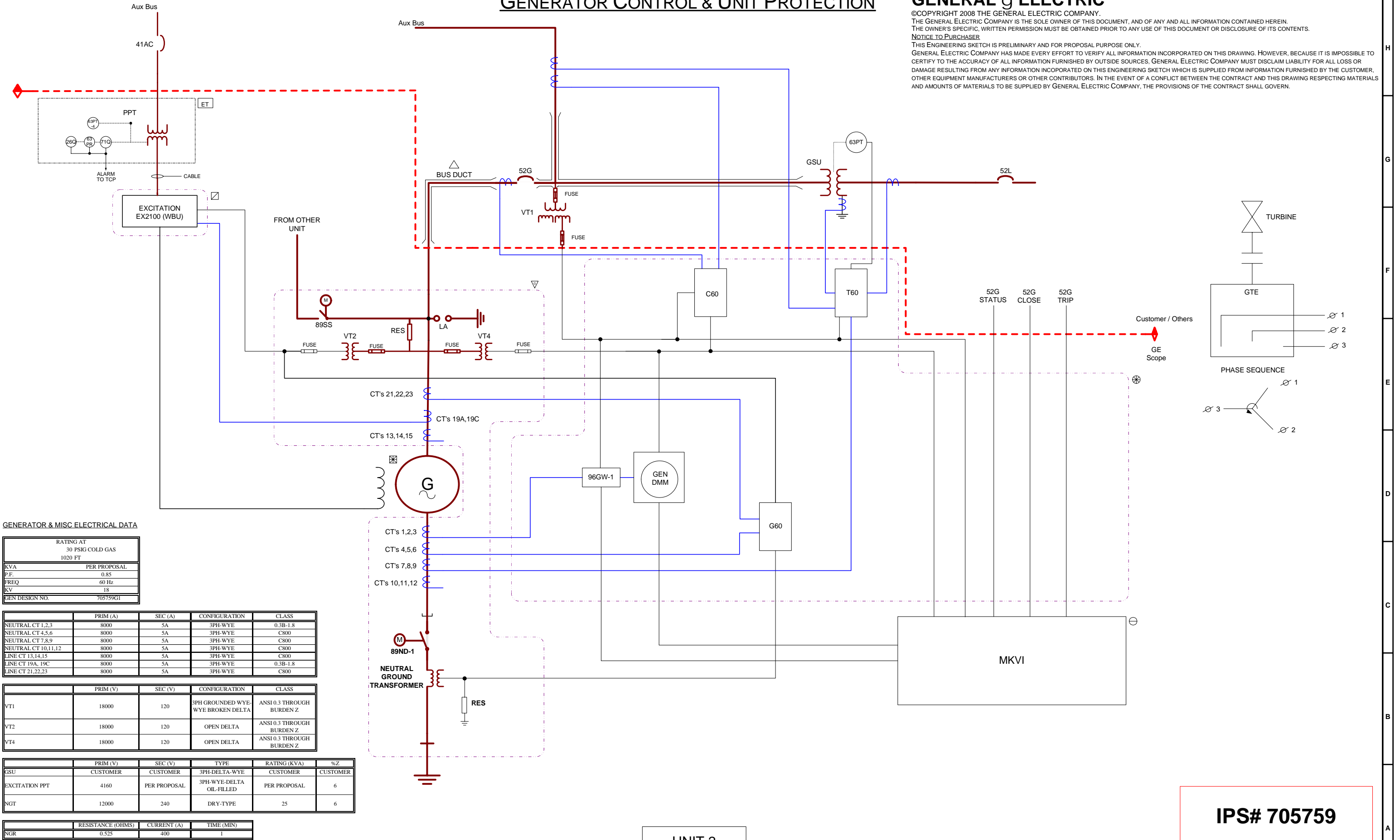


GENERATOR CONTROL & UNIT PROTECTION

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GENERATOR & MISC ELECTRICAL DATA

RATING AT 30 PSIG COLD GAS 1020 FT	
KVA	PER PROPOSAL
P.F.	0.85
FREQ	60 Hz
KV	18
GEN DESIGN NO.	705759GT

	PRIM (A)	SEC (A)	CONFIGURATION	CLASS
NEUTRAL CT 1,2,3	8000	5A	3PH-WYE	0.3B-1.8
NEUTRAL CT 4,5,6	8000	5A	3PH-WYE	C800
NEUTRAL CT 7,8,9	8000	5A	3PH-WYE	C800
NEUTRAL CT 10,11,12	8000	5A	3PH-WYE	C800
LINE CT 13,14,15	8000	5A	3PH-WYE	C800
LINE CT 19A, 19C	8000	5A	3PH-WYE	0.3B-1.8
LINE CT 21,22,23	8000	5A	3PH-WYE	C800

	PRIM (V)	SEC (V)	CONFIGURATION	CLASS
VT1	18000	120	3PH GROUNDED WYE- WYE BROKEN DELTA	ANSI 0.3 THROUGH BURDEN Z
VT2	18000	120	OPEN DELTA	ANSI 0.3 THROUGH BURDEN Z
VT4	18000	120	OPEN DELTA	ANSI 0.3 THROUGH BURDEN Z

	PRIM (V)	SEC (V)	TYPE	RATING (KVA)	%Z
GSU	CUSTOMER	CUSTOMER	3PH-DELTA-WYE	CUSTOMER	CUSTOMER
EXCITATION PPT	4160	PER PROPOSAL	3PH-WYE-DELTA OIL-FILLED	PER PROPOSAL	6
NGT	12000	240	DRY-TYPE	25	6

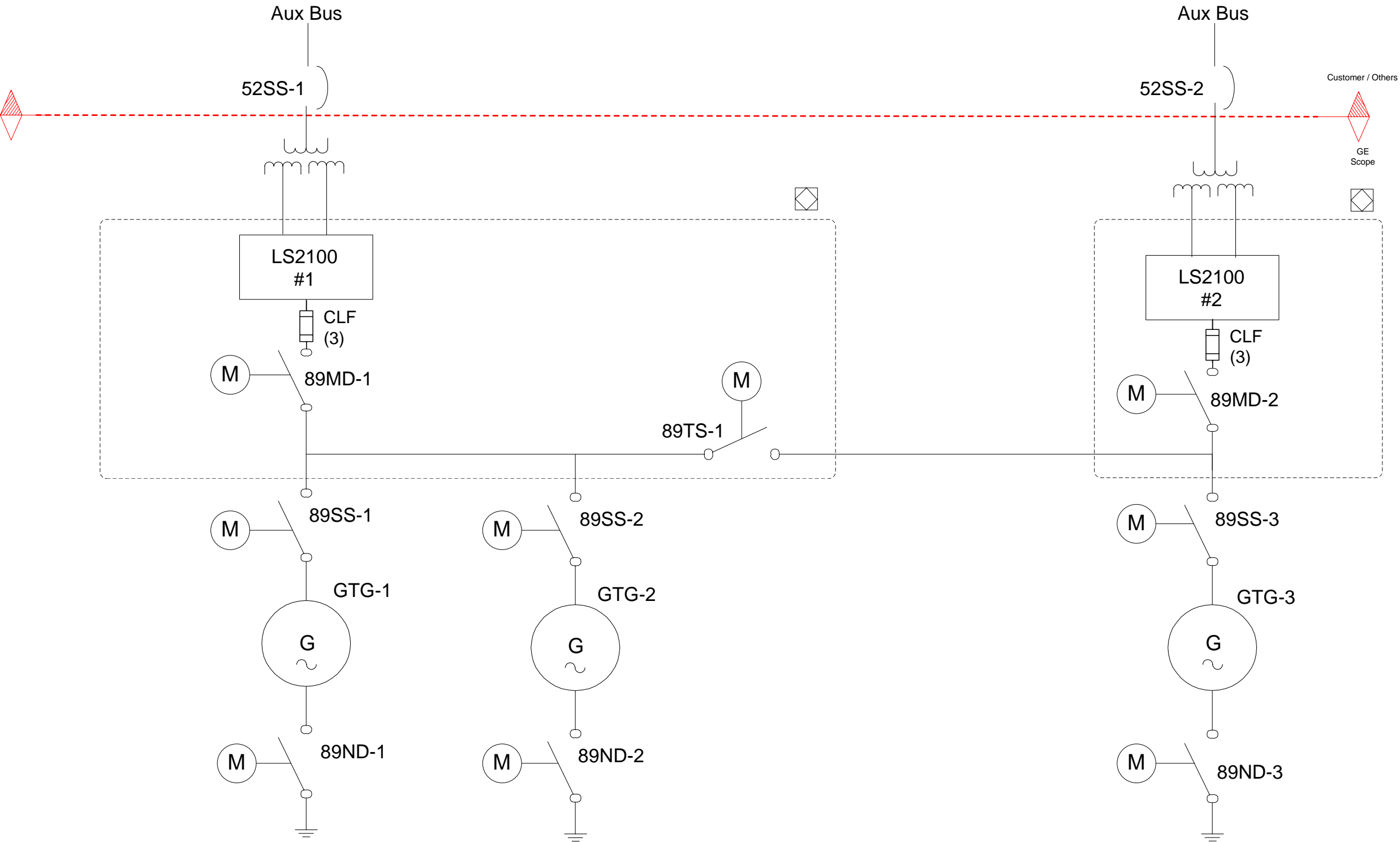
	RESISTANCE (OHMS)	CURRENT (A)	TIME (MIN)
NGR	0.525	400	1

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PLANT STATIC STARTUP CONFIGURATION

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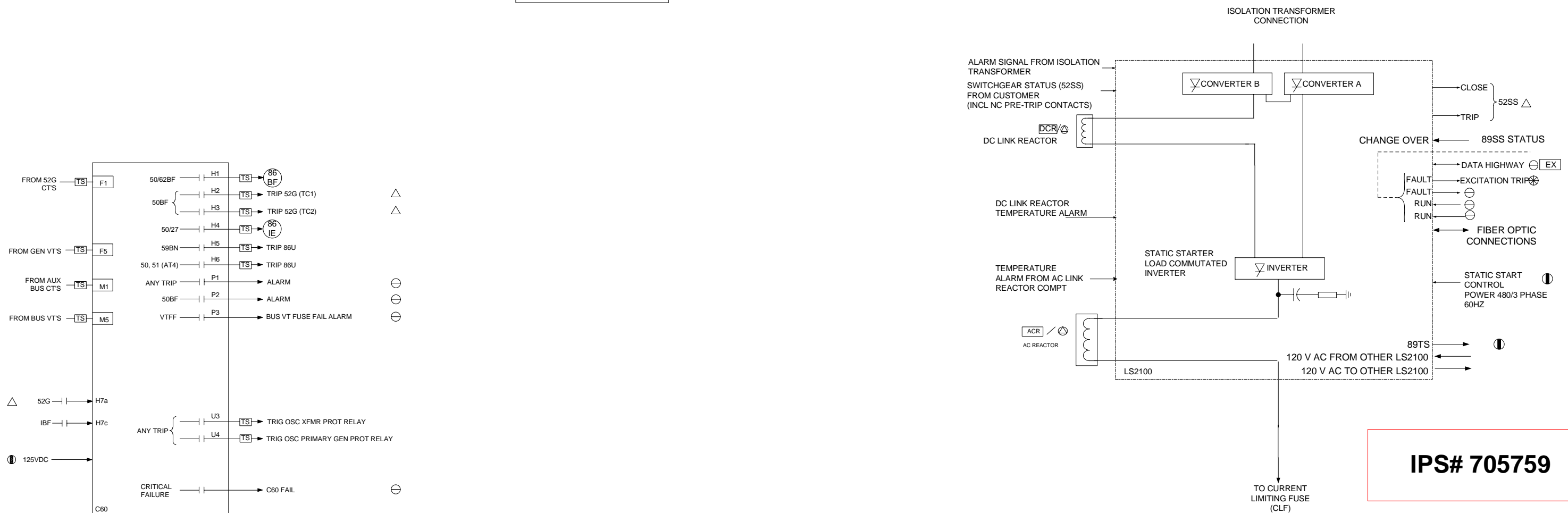
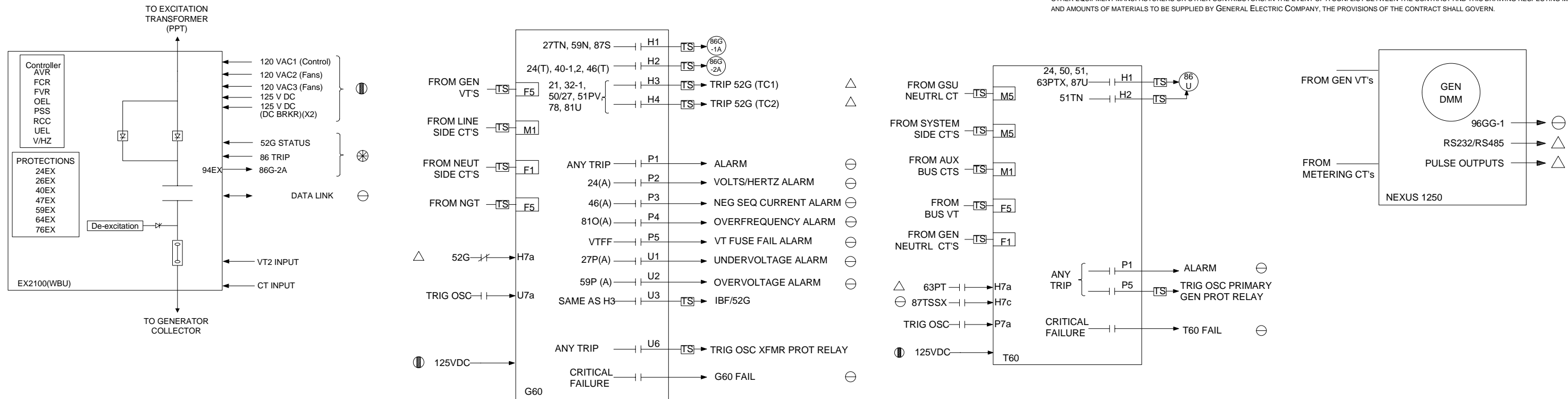
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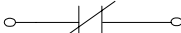









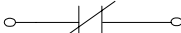

















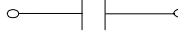





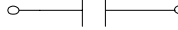





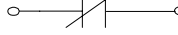











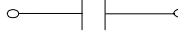





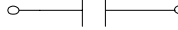





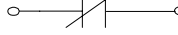



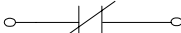

















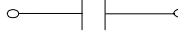





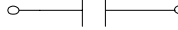





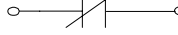

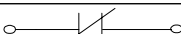






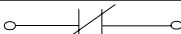


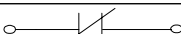






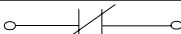


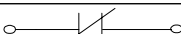






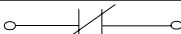




















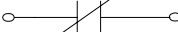








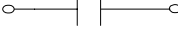

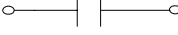



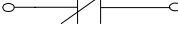

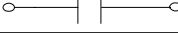





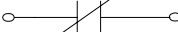








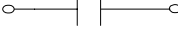

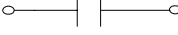



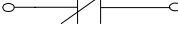

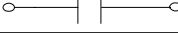














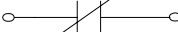








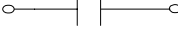

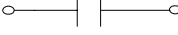



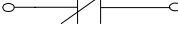

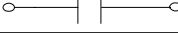





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CONFIGURATION

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MOTOR CONTROL CENTER (MCC)

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MCC1E-AC : LOAD TABLE

DEVICE NOMENCLATURE	SECONDARY DEVICE NOMENCLATURE	DEVICE DESCRIPTION	TYPE	RATING	UNITS	STARTER	BREAKER	EQUIPMENT LOCATION
88BN-1		Cooling Air Fan Motor #2 Bearing Area #1	M	7.5	HP	1	20	⊖
88BT-1		Turbine Compartment Cooling Air Fan #1	M	25	HP	2	60	⊖ ⊕
88FC-1		Cooling Water Fan Motor #1	M	40	HP	3	100	⊕
88FC-3		Cooling Water Fan Motor #3	M	40	HP	3	100	⊕
88HQ-1		Hydraulic Supply Pump Motor #1	M	60	HP	4	125	⊖ ⊕
88QA-1		Auxiliary Lube Oil Pump #1	M	100	HP	4	200	⊖ ⊕
88QS-1		Generator Auxiliary Seal Oil Pump #1	M	10	HP	1	20	⊖ ⊕
88QV-1A		Lube Mist Separator #1A	M	5	HP	1	15	⊖ ⊕
88TG-1		Turning Gear Motor #1	M	7.5	HP	1	20	⊕
88WC-1		Cooling Water Pump Motor #1	M	150	HP	5	300	⊕
88KA-1		PEECC Air Conditioner #1	O				30	⊖
		Alarm	O					⊖
88RC-1A		CO2 Skid	O				30	⊖
		50A Battery Charger #1	O				40	⊖
		Panel Board Transformer T1 (480/240/120V)	T				50	⊖

MCC1-AC : LOAD TABLE

DEVICE NOMENCLATURE	SECONDARY DEVICE NOMENCLATURE	DEVICE DESCRIPTION	TYPE	RATING	UNITS	STARTER	BREAKER	EQUIPMENT LOCATION
23HT-1A	88HT-1A	Space Heater Turbine Compartment Freeze Protection #1A	H	30	KW	3	100	⊖
23HT-1A		Space Heater Turbine Compartment Humidity Control #3A (1ph)	H	3.6	KW		15	⊖
23HT-3B		Space Heater Turbine Compartment Humidity Control #3B (1ph)	H	3.6	KW			⊖
23QT-1		Immersion Heater Lube Oil Tank #1	H	15	KW			⊖ ⊕
23QT-2		Immersion Heater Lube Oil Tank #2	H	15	KW	2	50	⊖ ⊕
23QT-3		Immersion Heater Lube Oil Tank #3	H	15	KW			⊖ ⊕
23VS-1	88VS-1	Space Heater Gas Valve Compartment Freeze Protection #1	H	30	KW	3	100	⊖ ⊕
23VS-3		Space Heater Gas Valve Compartment Humidity Control #3 (1ph)	H	3.6	KW	1	15	⊖ ⊕
88BL-1		Skid Cooling Air Fan Motor Lube Oil Skid #1	M	5	HP	1	15	⊖ ⊕
88FD-1A		Fuel Forwarding Pump Motor #1A	M	50	HP	3	100	⊖ ⊕
88FV-1		Cooling Air Fan Motor Liquid Fuel Skid #1	M	5	HP	1	15	⊖ ⊕
88TK-1		Turbine Exhaust Frame Cooling Blower #1	M	215	HP	6	450	⊖ ⊕
88VG-1		Load Compartment Cooling Air Fan #1	M	5	HP	1	15	⊖ ⊕
		Alarm	O					⊖
		Spare	O				30	SR
		Spare	O				30	SR
		Exciter / LCI Panel Board Feeder Breaker	O				125	⊖
		Exciter Panel Board Feeder Breaker	O				125	⊖

MCC2-AC : LOAD TABLE

DEVICE NOMENCLATURE	SECONDARY DEVICE NOMENCLATURE	DEVICE DESCRIPTION	TYPE	RATING	UNITS	STARTER	BREAKER	EQUIPMENT LOCATION
23FS-1	88FS-1	Space Heater Liquid Fuel Module Freeze Protection #1	H	30	KW	3	100	⊖ ⊕
23FS-3		Space Heater Liquid Fuel Module Humidity Control #3 (1ph)	H	3.6	KW	1	15	⊖ ⊕
23HG-1A		Generator Space Heater #1A	H	2.25	KW			⊖ ⊕
23HG-1B		Generator Space Heater #1B	H	2.25	KW	1	15	⊖ ⊕
23HL-1	88HL-1	Space Heater Lube Oil Skid Freeze Protection #1	H	30	KW	3	100	⊖ ⊕
23HL-3		Space Heater Lube Oil Skid Humidity Control #3 (1ph)	H	3.6	KW	1	15	⊖ ⊕
23HT-1B	88HT-1B	Space Heater Turbine Compartment Freeze Protection #1B	H	30	KW	3	100	⊖ ⊕
23WR-1		Space Heater Water Injection Skid #1	H	7.5	KW	1	20	⊖ ⊕
88AC-1		Turbine Air Inlet Evaporative Cooler Pump Motor #1	M	10	HP	1	20	⊖ ⊕
88AC-2		Turbine Air Inlet Evaporative Cooler Pump Motor #2	M	10	HP			⊖ ⊕
88BL-2		Skid Cooling Air Fan Motor Lube Oil Skid #2	M	5	HP	1	15	⊖ ⊕
88BN-2		Cooling Air Fan Motor #2 Bearing Area #2	M	7.5	HP	1	20	⊖ ⊕
88BT-2		Turbine Compartment Cooling Air Fan #2	M	25	HP	2	60	⊖ ⊕
88FC-2		Cooling Water Fan Motor #2	M	40	HP	3	100	⊕
88FC-4		Cooling Water Fan Motor #4	M	40	HP	3	100	⊕
88FV-2		Cooling Air Fan Motor Liquid Fuel Skid #2	M	5	HP	1	15	⊖ ⊕
88HQ-2		Hydraulic Supply Pump Motor #2	M	60	HP	4	125	⊖ ⊕
88QA-2		Auxiliary Lube Oil Pump #2	M	100	HP	4	200	⊖ ⊕
88QV-1B		Lube Mist Separator #1B	M	5	HP	1	15	⊖ ⊕
88TK-2		Turbine Exhaust Frame Cooling Blower #2	M	215	HP	6	450	⊖ ⊕
88VG-2		Load Compartment Cooling Air Fan #2	M	5	HP	1	15	⊖ ⊕
88WC-2		Cooling Water Pump Motor #2	M	150	HP	5	300	⊕
88KA-2		PEECC Air Conditioner #2	O				30	⊖
		Alarm	O					⊖
		Spare	O				30	SR
		50A Battery Charger #2	O				40	⊖

DC MCC: LOAD TABLE

DEVICE NOMENCLATURE	DEVICE DESCRIPTION	TYPE	RATING	UNITS	STARTER	BREAKER	EQUIPMENT LOCATION
88ES-1	Emergency Seal Oil Pump Motor #1	M	10	HP	3	100	⊖ ⊕
88QE-1	Emergency Lube Oil Pump Motor #1	M	20	HP	5	225	⊖ ⊕

NOTE: RATINGS LISTED ARE TYPICAL FOR THIS FRAME SIZE AND SUBJECTED TO CHANGE UPON ACTUAL DESIGN

AC PANEL BOARD # 1: 120/240VAC, 225A, 60HZ, 10KA SYM, 30 CIRCUIT

BREAKER NUMBER	BREAKER RATING	LOAD DESCRIPTION	EQUIPMENT LOCATION
0	60	Panel board incoming breaker	
1	20	Monitors & Transducers Ignition	⊖ ⊕
2	20	Compartment Lighting	⊖ ⊕
3	20	Offline Compressor Water Wash Injection Solenoid Valve #4	⊖ ⊕
3	20	Online Compressor Water Wash Injection Solenoid Valve #6	⊖ ⊕
3	20	Evaporative Cooler Solenoid Valves	⊖ ⊕
5	20	Gas Auxiliary Monitor Panel	GAMP
6	20	Spare	SR
7	20	Fire Protection Panel	F
8	20	Dew Point Sensor #1	⊖ ⊕
9	20	Spare	SR
10	20	Terminal Enclosure Heater #1	⊖
11	20	Spare	SR
12	20	Compartment Lighting	⊖ ⊕
13	20	Air Process Skid	AP
14	20	Spare	SR
15	20	Cooling Water Module Outlet Valve Motor	⊕
16	20	Spare	SR
17	20	Atomizing Air Bypass Valve	⊖ ⊕
18	20	89SS Motor	⊖
19	20	89ND Motor	⊖
20	20	Spare	SR
21	20	Inlet Compartment (Lights, Receptacles, 34TF-1, 88MH-1)	⊖
22	20	Cooling Air Fan Motor Liquid Fuel Skid #5	⊖
23	60	Inlet Compartment (Lights, Receptacles, 34TF-1, 88MH-1)	⊖
24	20	Lift Oil Solenoid Valve #1	⊖ ⊕
25	20	Spare	SR
26	20	Spare	SR
27	20	Spare	SR
28	20	Spare	SR
29	20	Spare	SR
30	20	Spare	SR

DC PANEL BOARD MCC1-DC : 125VDC, 225A PANEL BOARD

BREAKER NUMBER	BREAKER RATING	LOAD DESCRIPTION	EQUIPMENT LOCATION
1	20	Fire Protection Auxiliary Relays	⊖
2	20	Compartment Lighting	⊖ ⊕
3	20	Spare	SR
4	20	Exciter	EX
5	20	GP2100 (C60) Control Power	⊖ ⊕
6	20	GP2100 (Primary) Control Power	⊖ ⊕
7	20	Spare	SR
8	20	TCP Control Power	⊖
9	20	Exciter Control Power (Additional)	EX
10	30	Gas Auxiliary Monitor Panel	GAMP
11	20	Spare	SR
12	20	Spare	SR

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PANEL BOARDS AND MISCELLANEOUS LOADS

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480V LEC PANEL BOARD (480V,3WIRE,125A,65KA) - POWERED BY MCC 1-AC

BREAKER NUMBER	BREAKER RATING	LOAD DESCRIPTION	EQUIPMENT LOCATION
0	125	LEC Distribution panel board incoming breaker (480V AC level)	
1	30	A/C Unit #1 (5 ton typical)	
2	30	A/C Unit #2 (5 ton typical)	
3	60	Static Starter Control Power	LCI
4	40	10KVA 480-240/120 VAC Transformer to 240 V EX Compt Panelboard (see below)	

240V LEC PANEL BOARD (1PHASE,60HZ,3WIRE,240V,125A,10KA)

BREAKER NUMBER	BREAKER RATING	LOAD DESCRIPTION	EQUIPMENT LOCATION
0	60	LEC Distribution panel board incoming breaker (240V AC level)	
1	20	Exciter Control	EX
2	20	Isolation Transformer (Oil Filled Type)	ISO
3	20	Exciter Fans	EX
4	20	Exciter Fans	EX
5	20	Compartment Receptacles	
6	20	Compartment Lights	
7	20	Static Starter Space Htr	LCI
8	20	Compartment Smoke Detectors	
9	20	DC Link Reactor Space Htr	DCR
10	20	AC Link Reactor Space Htr	ACR
11	20	Spare	
12	20	Spare	

480V EX COMPT. PANEL BOARD (480V,3WIRE,125A,65KA)- POWERED BY MCC 1-AC

BREAKER NUMBER	BREAKER RATING	LOAD DESCRIPTION	EQUIPMENT LOCATION
0	125	EX Compt. panel board incoming breaker (480V AC level)	
1	30	A/C Unit #1 (5 ton typical)	
2	30	A/C Unit #2 (5 ton typical)	
3	30	10KVA 480-240/120 VAC Transformer to 240 V EX Compt Panelboard (see below)	

240V EX COMPT. PANEL BOARD (1PHASE,60HZ,3WIRE,240V,125A,10KA)

BREAKER NUMBER	BREAKER RATING	LOAD DESCRIPTION	EQUIPMENT LOCATION
0	60	EX Compt panel board incoming breaker (240V AC level)	
1	20	Exciter Control	EX
2	20	Spare	
3	20	Exciter Fan	EX
4	20	Exciter Fan	EX
5	20	Compartment Receptacles	
6	20	Compartment Lights	
7	20	Spare	
8	20	Compartment Smoke Detectors	
9	20	Spare	
10	20	Spare	
11	20	Spare	
12	20	Spare	

LOADS POWERED BY CUSTOMER AUX POWER

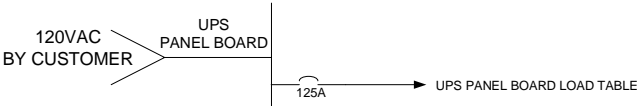
DEVICE NOMENCLATURE	DEVICE DESCRIPTION	TYPE	RATING	UNITS	POWER SOURCE
23AK-1	Space Heater Atomizing Air Compressor Motor #1	H	200	W	120VAC by Customer
23FP-1	Motor Heater for 88FP-1	H	100	W	120VAC by Customer
88AK-1	Atomizing Air System Compressor Drive Motor #1	M	500	HP	4160VAC by Customer
88FP-1	Liquid Fuel Pump Drive Motor #1	M	125	HP	4160VAC by Customer
88WN-1	Water Injection Pump Motor #1	M	250	HP	480VAC by Customer
88WN-2	Water Injection Pump Motor #2	M	250	HP	480VAC by Customer
	Water Wash Skid Panel	O			480VAC by Customer

WATER WASH SKID 480V, 3PH, 60HZ, 65KA

DEVICE NOMENCLATURE	SECONDARY DEVICE NOMENCLATURE	DEVICE DESCRIPTION	TYPE	RATING	UNITS	STARTER	BREAKER
23WS-1	88WS-1	Water Wash Skid Space Heater #1	H	10	KW	2	40
88TW-1		Turbine / Compressor Wash Water Pump Motor #1	M	25	HP	2	60

WATER WASH SKID 120V/ 240V 1PH 60HZ PANEL BOARD (INTERNALLY POWERED BY SKID)

BREAKER NUMBER	BREAKER RATING	LOAD DESCRIPTION
1	15	Water Wash Lighting
2	15	Water Wash Receptacles
3	15	Heater Water Wash Pump Motor #1
4	15	Water Wash Vent Fan Motor #1
5	15	Water Wash Control Power
6	15	Water Wash Spare



UPS PANEL BOARD LOAD TABLE (1PH,60HZ,3W, 120/240V ,125A,10KA)

BREAKER NUMBER	BREAKER RATING	LOAD DESCRIPTION	EQUIPMENT LOCATION
1	20	Spare	
2	20	HMI (960W)	
3	20	ETHERNET SWITCH - A (120W)	
4	20	HYDROGEN CONTROL PANEL (200W)	H2/X
5	20	Spare	
6	20	Spare	
7	20	ETHERNET SWITCH - B (120W)	
8	20	ETHERNET SWITCH	
9	20	Spare	
10	20	Spare	
11	20	Spare	
12	20	Spare	

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