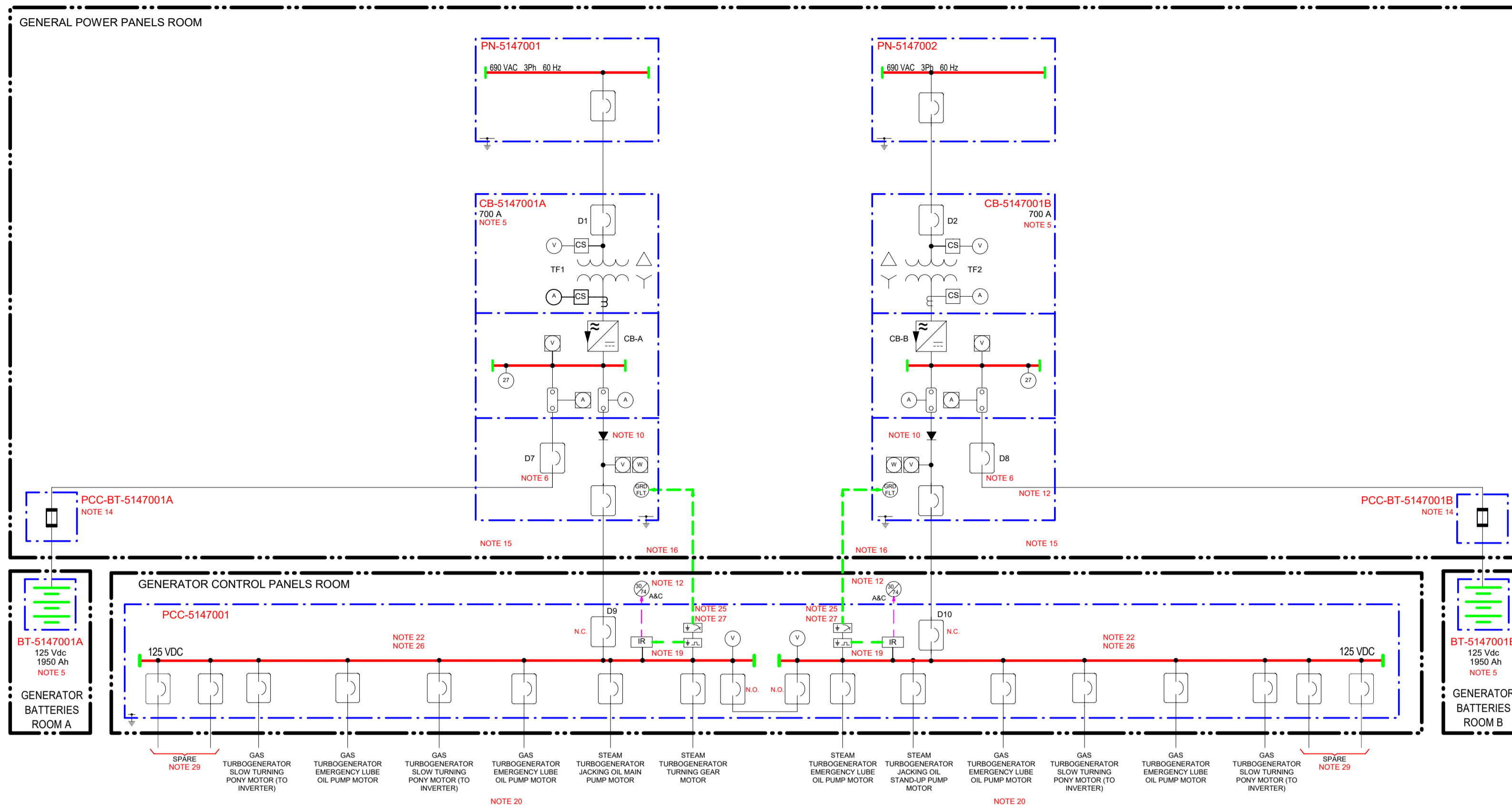
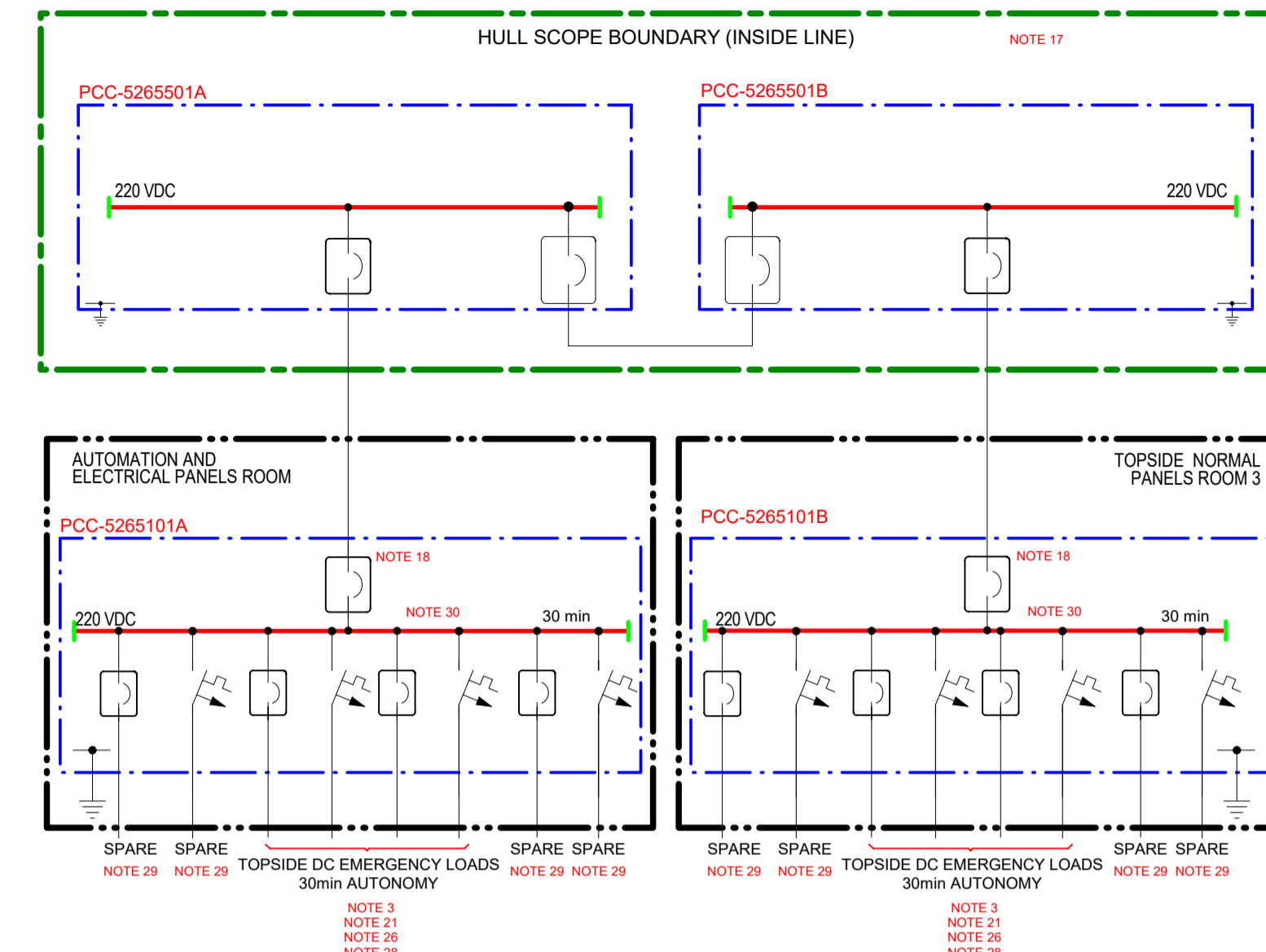


125VDC - UNINTERRUPTIBLE AUXILIARY LOADS SYSTEM FOR TURBOGENERATORS AND COMBINED CYCLE PLANT



220VDC - TOPSIDE DC EMERGENCY LOADS SYSTEM



REFERENCE DOCUMENTS

- I-ET-3000.00-0000-940-P4X-002 - SYMBOLS FOR PRODUCTION UNIT DESIGN
- DR-ENGP-M-1.3 - SAFETY ENGINEERING
- I-DE-3010.2Q-5265-946-P4X-001 - GENERAL ARRANGEMENT
- I-ET-3010.2Q-5265-773-P4X-001 - EMERGENCY LOAD LIST
- I-ET-3010.2Q-5140-741-P4X-005 - REQUIREMENTS FOR HUMAN ENGINEERING DESIGN FOR ELECTRICAL SYSTEMS OF OFFSHORE UNITS
- I-ET-3010.00-5147-332-P4X-002 - TECHNICAL SPECIFICATION - STEAM TURBINE DRIVER FOR STEAM TURBOGENERATOR PACKAGE SPECIFICATION
- I-ET-3010.00-5147-332-P4X-001 - TECHNICAL SPECIFICATION - GAS TURBINE DRIVER FOR GAS TURBOGENERATOR SET
- I-ET-3010.00-5265-888-P4X-001 - AUTOMATION PANELS
- I-ET-3010.00-5140-741-P4X-001 - SPECIFICATION FOR ELECTRICAL DESIGN FOR OFFSHORE UNITS
- I-ET-3010.00-5140-741-P4X-004 - SPECIFICATION FOR LOW-VOLTAGE GENERIC ELECTRICAL PANELS FOR OFFSHORE UNITS
- I-ET-3010.00-5140-773-P4X-002 - SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS
- I-ET-3010.00-5140-773-P4X-001 - SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS
- I-ET-3010.00-5140-797-P4X-001 - SPECIFICATION FOR GENERIC ELECTRICAL EQUIPMENT FOR OFFSHORE UNITS
- I-DE-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM
- I-ET-3010.00-5140-741-P4X-002 - MEDIUM-VOLTAGE MOTOR CONTROL CENTER AND SWITCHGEAR FOR OFFSHORE UNITS
- I-ET-3010.00-5140-741-P4X-001 - LOW-VOLTAGE MOTOR CONTROL CENTER AND SWITCHGEAR FOR OFFSHORE UNITS
- I-DE-3010.2Q-5265-946-P4X-002 - HULL UPS AND DC SYSTEMS ONE-LINE DIAGRAM
- I-DE-3010.2Q-5140-844-P4X-001 - TOPSIDE 220V SYSTEMS ONE-LINE DIAGRAM
- I-ET-3010.2Q-5100-940-P4X-001 - TECHNICAL SPECIFICATION - COMBINED CYCLE POWER PLANT PACKAGE
- I-DE-3010.2Q-1200-844-P4X-001 - AREA CLASSIFICATION - GENERAL

GENERAL NOTES AND REQUIREMENTS

- EACH BATTERY CHARGER AND RECTIFIER SHALL GUARANTEE NORMAL VOLTAGE IN ITS DISTRIBUTION PANEL, EVEN DURING MALFUNCTION IN ONE OF THE COMPONENTS (RECTIFIER, TRANSFORMERS, ETC.) THE OUTPUT VOLTAGE SHALL BE INDEPENDENT FROM OTHER SYSTEMS, EQUIPMENT, EXTERNAL CONTROL, VOLTAGES OR CONTACTS INCLUDING OTHER UPS, GENERIC UPS OR A/C SYSTEM.
- ALL BATTERY CHARGERS SHALL BE PROVIDED WITH ALARM AND MONITORING AT A/C IN ACCORDANCE WITH I-ET-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNAL LIST.
- ONLY LOADS DEFINED IN I-ET-3010.2Q-5265-773-P4X-001 - EMERGENCY LOAD LIST SHALL BE FED BY TOPSIDE EMERGENCY LOADS DISTRIBUTION PANEL 220VDC (PCC-5265101A) AND BY TOPSIDE EMERGENCY LOADS DISTRIBUTION PANEL 220VAC (PN-5265101A).
- REQUIRED AUTONOMY FOR EMERGENCY LIGHTING SYSTEM IS ACCORDING TO DR-ENGP-M-1.3 - SAFETY ENGINEERING.
- REQUIRED AUTONOMY AND CAPACITY FOR BATTERIES BT-5147001A AND CAPACITY FOR BATTERY CHARGERS CB-5147001A SHALL BE CONFIRMED BY SELLERS DURING DETAILED DESIGN.
- BATTERIES CIRCUIT-BREAKERS SHALL NOT HAVE UNDERVOLTAGE TRIP COILS (UVTI) OR BE MOTOR OR SOLENOID OPERATED.
- EQUIPMENT CB-5147001A, BT-5147001A, PN-5265101A, PCC-5265101A AND PCC-5265101B SHALL BE INSTALLED IN A DIFFERENT LOCATION FROM CB-5147001B, BT-5147001B, PCC-5265101A AND PCC-5265101B RESPECTIVELY.
- GENERIC DC UPS TRIP FUNCTIONS SHALL BE IN ACCORDANCE WITH I-ET-3010.00-5140-773-P4X-002 - SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS.
- CIRCUIT-BREAKERS IN PCC-5265101A AND PCC-5265101B WILL OPEN AFTER 30 MINUTES OF CONTINUOUS OPERATION WITHOUT 600VAC POWER SUPPLY TO THE CB-5265101A/B, DISCONNECTING PART OF THE EMERGENCY LIGHTING.
- RELAYS SHALL BE PROVIDED. DROP DIODES SHALL NOT BE ACCEPTED AS MEAN TO MAINTAIN THE CONSUMER VOLTAGE IN DISTRIBUTION PANEL IN THE RANGE OF 100% AND 115%.
- EMERGENCY LIGHTING FIXTURES IN TOPSIDES WITH EXTENDED AUTONOMY OF 12h ARE DEFINED IN DR-ENGP-M-1.3 - SAFETY ENGINEERING AND I-ET-3010.00-5140-700-P4X-001 - SPECIFICATION FOR ELECTRICAL DESIGN FOR OFFSHORE UNITS.
- GENERIC DC UPS MINIMUM SIGNALS SHALL BE IN ACCORDANCE WITH I-DE-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM, I-ET-3010.2Q-5140-741-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST AND I-ET-3010.00-5140-773-P4X-002 - SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS.
- CIRCUIT-BREAKERS IN PCC-5265101A AND PCC-5265101B SHALL HAVE TWO BUSBARS: ONE FOR LIGHTING LOADS WITH AUTONOMY TIME 30min AND OTHER FOR LIGHTING LOADS WITH AUTONOMY TIME 12h. FOR MORE INFORMATION ABOUT EMERGENCY LIGHTING DISTRIBUTION, REFER TO I-DE-3010.2Q-5140-946-P4X-003 - TOPSIDE 220V SYSTEMS ONE-LINE DIAGRAM.
- TOPSIDE PANEL, PCC-5265101A AND PCC-5265101B SHALL HAVE TWO BUSBARS: ONE FOR LIGHTING LOADS WITH AUTONOMY TIME 30min AND OTHER FOR LIGHTING LOADS WITH AUTONOMY TIME 12h. FOR MORE INFORMATION ABOUT EMERGENCY LIGHTING DISTRIBUTION, REFER TO I-DE-3010.2Q-5140-946-P4X-003 - TOPSIDE 220V SYSTEMS ONE-LINE DIAGRAM.
- FUSES OR CIRCUIT-BREAKERS TO PROTECT THE CABLES SHALL BE INSTALLED INSIDE A BOX, IN A SAFE PLACE OUTSIDE THE BATTERIES ROOM, BUT CLOSE TO IT.
- ALL SIGNALING AND INSTRUMENTS OF PANELS ARE NOT SHOWN IN THIS DOCUMENT FOR MORE INFORMATION, REFER TO I-ET-3010.00-5140-773-P4X-002 - SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS.
- ALL SIGNALS SENT TO A/C SHALL BE THROUGH TOPSIDE ELECTRICAL SYSTEM AUTOMATION CONTROLLERS. THIS DOCUMENT DOES NOT SHOW SIGNALS TO A/C. REFER TO I-ET-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM, I-ET-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST AND I-ET-3010.00-5140-773-P4X-002 - SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS.
- FOR MORE INFORMATION ABOUT HULL EMERGENCY LOADS DISTRIBUTION PANELS 220VAC AND HULL EMERGENCY LOADS DISTRIBUTION PANELS 220VDC, REFER TO I-DE-3010.2Q-5265-946-P4X-002 - HULL UPS AND DC SYSTEMS ONE-LINE DIAGRAM.
- CAPACITY OF CIRCUIT-BREAKERS SHALL BE CALCULATED DURING DETAILED DESIGN.
- FOR MORE INFORMATION ABOUT INTELLIGENT RELAYS AND SIGNALS TO BE MONITORED BY THEM, REFER TO I-ET-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM AND I-ET-3010.00-5140-773-P4X-002 - SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS.
- ALL SIGNALS SENT TO A/C SHALL BE THROUGH TOPSIDE ELECTRICAL SYSTEM AUTOMATION CONTROLLERS. THIS DOCUMENT DOES NOT SHOW SIGNALS TO A/C. REFER TO I-ET-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM, I-ET-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST AND I-ET-3010.00-5140-773-P4X-002 - SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS.
- DC EMERGENCY LOADS INSTALLED IN EXTERNAL NON-HAZARDOUS AREAS SHALL BE SUITABLE FOR INSTALLATION IN ZONE 2 GROUP I/A TEMPERATURE T3, OTHERWISE SHALL COMPLY WITH I-DE-3010.2Q-1200-844-P4X-001 - AREA CLASSIFICATION - GENERAL. EMERGENCY LIGHTING FIXTURES INSTALLED OUTDOORS SHALL BE SUITABLE FOR INSTALLATION IN ZONE 1 GROUP I/A TEMPERATURE T3.
- THESE SHALL NOT BE NON-EMERGENCY LOADS FED FROM ANY OF THESE SYSTEMS. INCLUSION OF THESE KIND OF LOADS SHALL BE APPROVED BY PETROBRAS. IN CASE OF INCLUSION OF THESE KIND OF LOADS IN THESE SYSTEMS, WHEN INSTALLED IN NON-HAZARDOUS EXTERNAL AREAS, THEY SHALL BE TRIPPED BY ESD SIGNALS OR LOADS SHALL BE PROPER FOR INSTALLATION IN ZONE 2 GROUP I/A TEMPERATURE T3 WHEN INSTALLED IN HAZARDOUS EXTERNAL AREAS. LOADS EQUIPMENT SHALL BE CERTIFIED IN ACCORDANCE WITH I-DE-3010.2Q-1200-844-P4X-001 - AREA CLASSIFICATION - GENERAL.
- TURBOGENERATOR AND COMBINED CYCLE PLANT PACKAGES UNINTERRUPTIBLE AUXILIARY LOADS ACCORDING TO I-ET-3010.00-5147-332-P4X-001 - TECHNICAL SPECIFICATION - TURBOGENERATOR PACKAGE.
- I-ET-3010.2Q-5100-940-P4X-001 - TECHNICAL SPECIFICATION - COMBINED CYCLE POWER PLANT PACKAGE AND I-ET-3010.2Q-5147-332-P4X-002 - STEAM TURBINE DRIVER FOR STEAM TURBOGENERATOR SET.
- MECHANICAL INTERLOCKING TO AVOID SIMULTANEOUS CLOSING OF MORE THAN TWO CIRCUIT-BREAKERS. FOR MORE INFORMATION REFER TO TELECOMMUNICATION DOCUMENTATION.
- THESE ELECTRICAL PANELS ARE SUPPLIED BY EMERGENCY LOADS DISTRIBUTION PANELS FOR CONTROL PURPOSE. CONTROL BUSBAR SHALL BE 220VDC RATED VOLTAGE. INTERNAL COMPONENTS AND DISTRIBUTION RELATED TO THIS SUPPLY ARE DESCRIBED IN I-ET-3010.00-5140-741-P4X-001 - LOW-VOLTAGE MOTOR CONTROL CENTER AND SWITCHGEAR FOR OFFSHORE UNITS AND I-ET-3010.00-5140-741-P4X-002 - MEDIUM-VOLTAGE MOTOR CONTROL CENTER AND SWITCHGEAR FOR OFFSHORE UNITS.
- FOR PANELS WITH POSSIBILITY TO OPERATE IN "L" CONFIGURATION WITH INTERCONNECTION CIRCUIT-BREAKERS CLOSED, IT SHALL BE PROVIDED A LOGIC TO DISABLE ONE OF INSULATION MONITORING DEVICES IN THIS CONDITION. IT SHALL ALSO BE PROVIDED A LOGIC TO ENABLE BOTH OF INSULATION MONITORING DEVICES DURING THE RETURN TO "N" CONFIGURATION.
- IN EMERGENCY DISTRIBUTION PANELS:
  - FOR REDUNDANT EMERGENCY SIGNALS, INSTALLED IN HAZARDOUS AREA ZONE 1, OUTGOING CIRCUIT-BREAKERS (INCLUDING DISTRIBUTION PANELS INCOMING CIRCUITS) SHALL HAVE INDIVIDUAL GROUND FAULT DETECTOR DEVICES (EFI). IN CASE OF GROUND FAULT DETECTION, EFI SHALL ALARM AND INSTANTANEOUSLY TRIP THE CIRCUIT-BREAKERS.
  - OTHER EMERGENCY LOADS SHALL BE GROUPED IN A SAME EFI. IN CASE OF GROUND FAULT DETECTION, EFI SHALL ONLY ALARM.
- FOR MORE INFORMATION REFER TO I-ET-3010.00-5140-741-P4X-004 - SPECIFICATION FOR LOW-VOLTAGE GENERIC ELECTRICAL PANELS FOR OFFSHORE UNITS.
- LOW INSULATION SHALL GENERATE AN ALARM SIGNAL TO BE SENT TO TOPSIDE ELECTRICAL SYSTEM AUTOMATION CONTROLLERS.
- OUTGOING CIRCUIT-BREAKERS THAT FEED EQUIPMENT LOCATED IN OPEN AREA AND NOT CERTIFIED FOR HAZARDOUS AREA ZONE 3 SHALL HAVE SHUNT TRIP COILS.
- THE QUANTITY OF SPARE OUTGOING CIRCUIT-BREAKERS SHALL BE ACCORDING TO I-ET-3010.00-5140-741-P4X-004 - SPECIFICATION FOR LOW-VOLTAGE GENERIC ELECTRICAL PANELS FOR OFFSHORE UNITS.
- TOPSIDE EMERGENCY DISTRIBUTION PANELS FED BY HULL PANELS SHALL HAVE EFI (EARTH FAULT INDICATORS) COMPATIBLE WITH INSULATION MONITORING DEVICES INSTALLED IN HULL EMERGENCY DISTRIBUTION PANELS.
- SOME A/C PANELS DO NOT REQUIRE ANY CONVERTERS OR RECTIFIERS. IN THIS WAY, THIS DRAWING IS NOT INTENDED TO DETAIL INTERNAL COMPONENTS OF A/C PANELS. FOR MORE INFORMATION ABOUT CONVERTERS AND RECTIFIERS INSIDE AUTOMATION PANELS, REFER TO I-ET-3010.00-5265-888-P4X-001 - AUTOMATION PANELS.
- THIS RELAY 27 SIGNAL SHALL BE SENT TO CSS TO PERFORM THE SAFETY INTERLOCK WITH ESD SIGNAL.

LEGEND

ASC	AUTOMATION AND CONTROL SYSTEM
CSS	CONTROL AND SAFETY SYSTEM
ESD	EMERGENCY SHUTDOWN
EF	EMERGENCY FAULT DETECTOR
HMB	HUMAN MACHINE INTERFACE
---	BOUNDARY LINE BETWEEN TOPSIDE AND HULL
---	EQUIPMENT ENCLOSURE
---	COMPARTMENT BOUNDARY
---	GENERAL NETWORK COMMUNICATION
---	HARDWIRED COMMUNICATION
IR	INTELLIGENT RELAY

REV.	DESCRIPTION	DATE	EXEC.	CHECK.	APPROV.
0	ORIGINAL ISSUE	Apr/19/24	U4QR	UR6X	UQBE

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THIS FORM IS PART OF STANDARD PETROBRAS N-301-REJ-L-ANEX-A - FIGURE A.9  
Smart Electrical 2019 / I-DE-3010.2Q-5265-946-P4X-001

**PETROBRAS** SRGE

CLIENT: MARLIM LESTE E SUL

JOB: BASIC DESIGN - REVIT I

AREA: MARLIM LESTE E SUL

TITLE: TOPSIDE UPS AND DC SYSTEMS ONE-LINE DIAGRAM

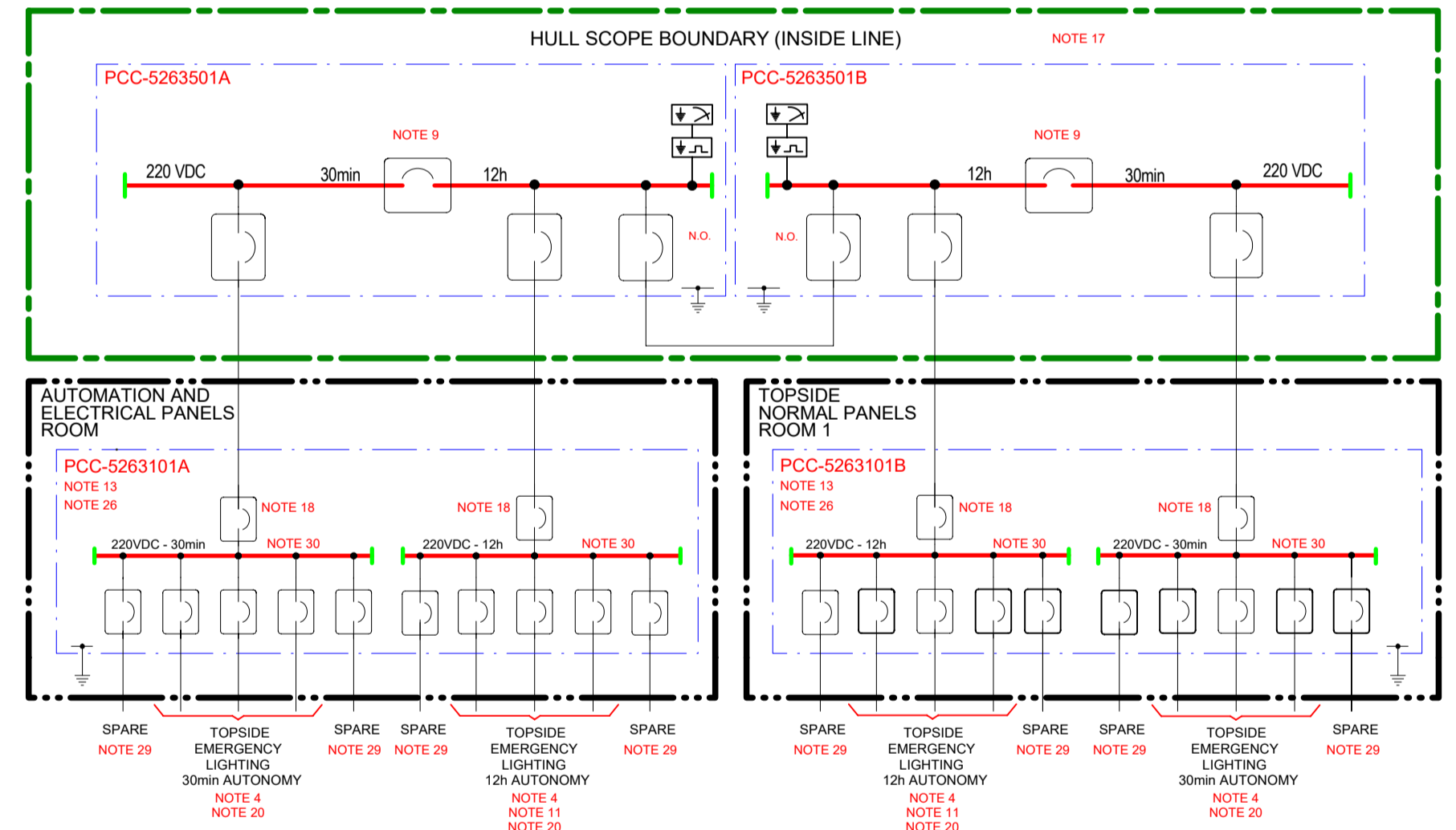
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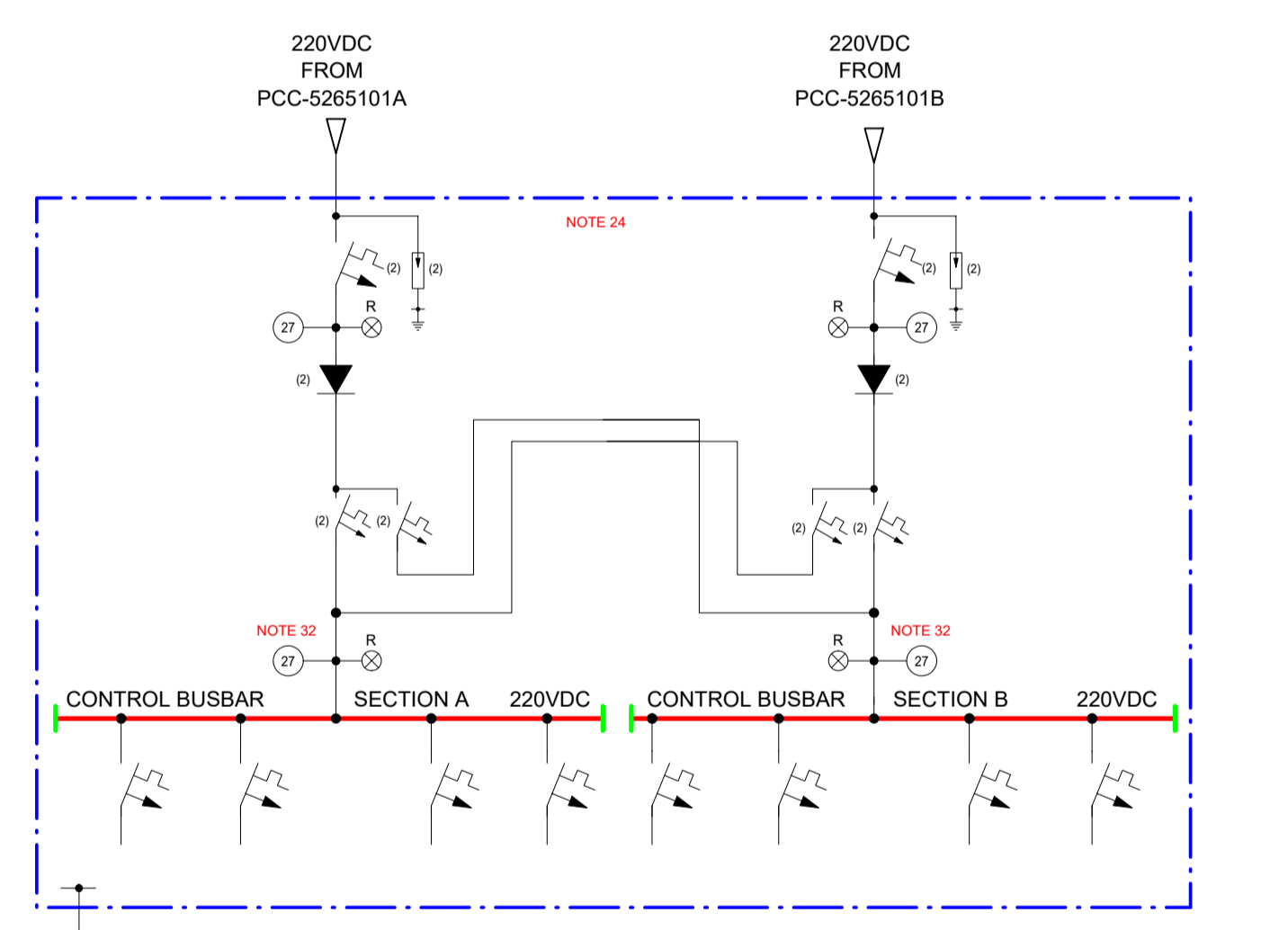
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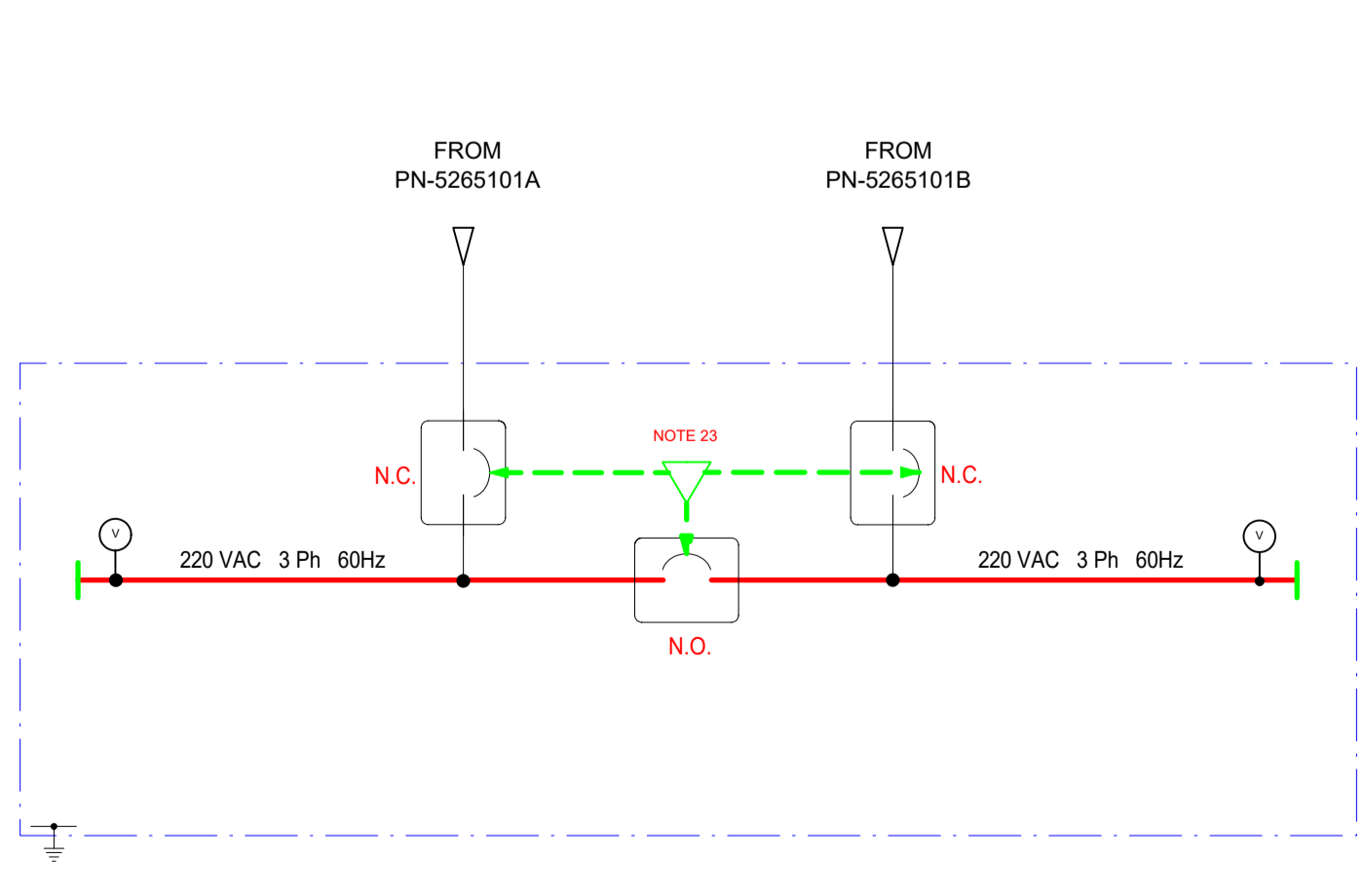
220 VDC - TOPSIDE EMERGENCY LIGHTING SYSTEM



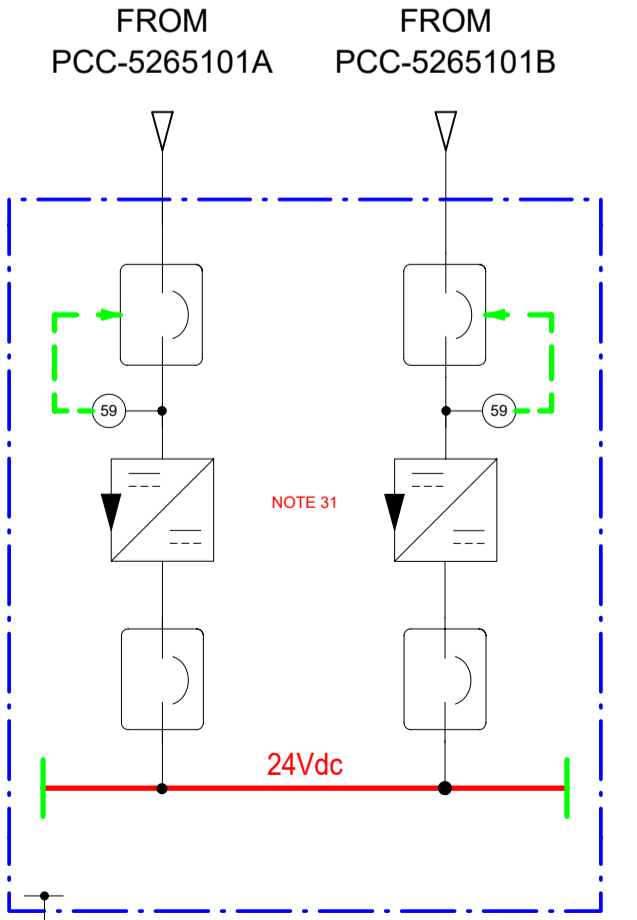
TYPICAL SUPPLY FOR TOPSIDE ELECTRICAL PANELS



TYPICAL SUPPLY FOR TELECOMMUNICATION PANELS

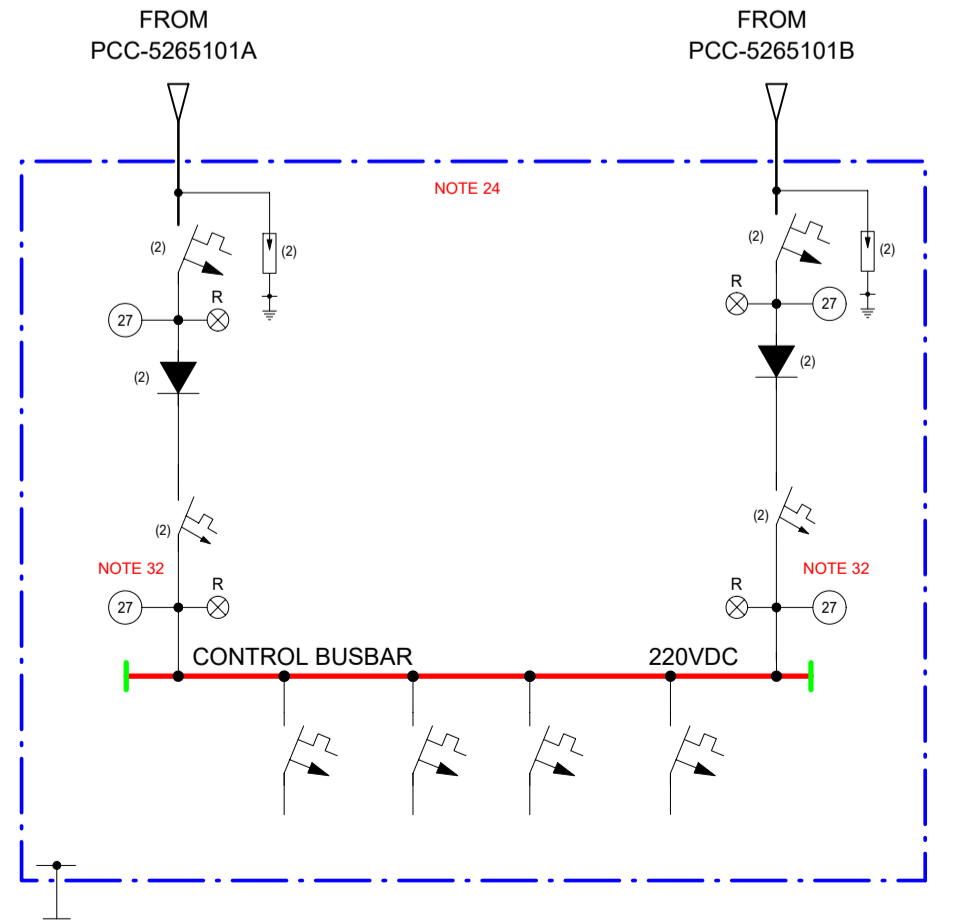


TYPICAL SUPPLY FOR TOPSIDE AUTOMATION PANELS



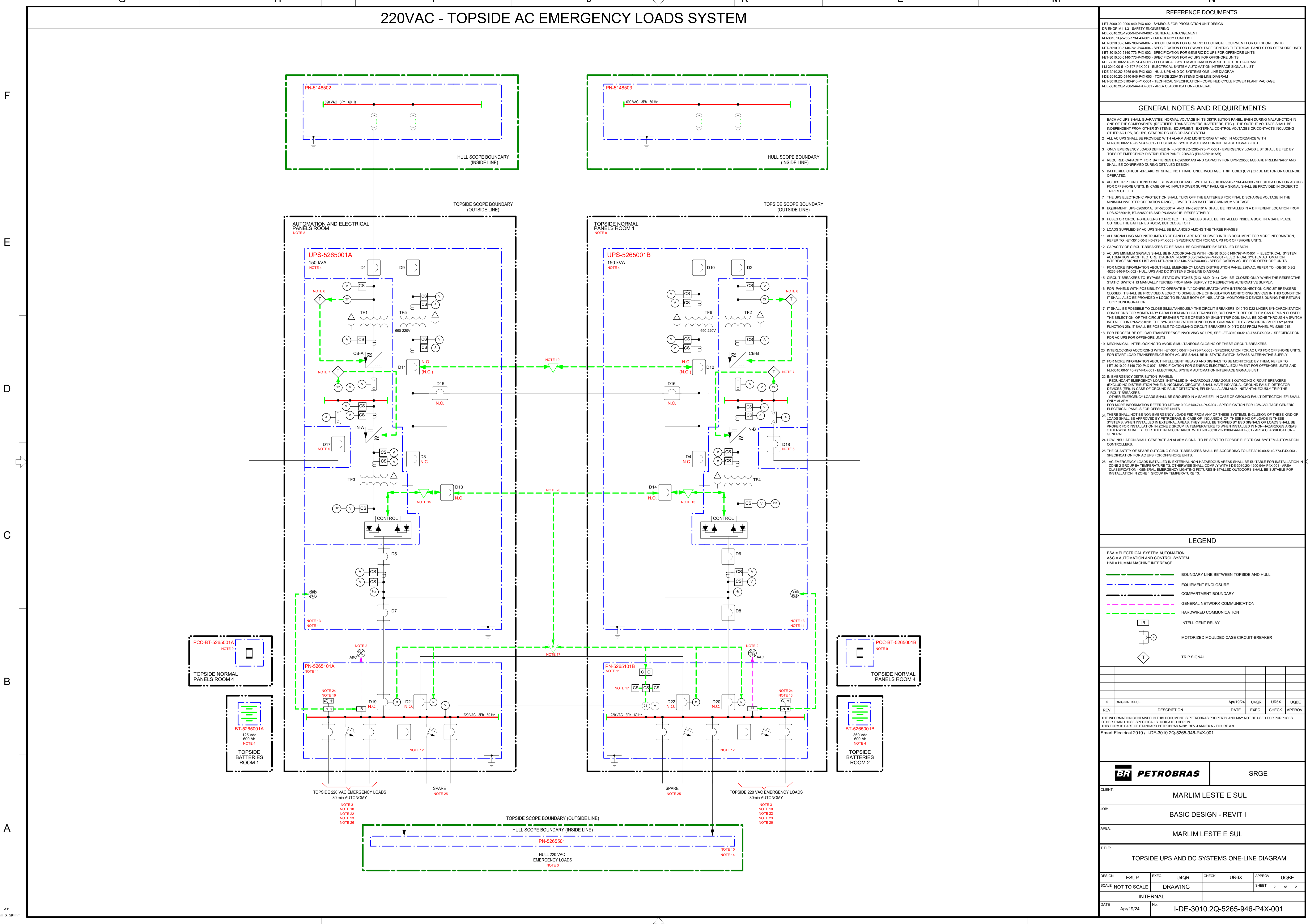
220VDC - TOPSIDE DC EMERGENCY LOADS SYSTEM

TYPICAL REDUNDANT SUPPLY FOR 220VDC CONTROL VOLTAGE FOR MV/LV SWITCHGEARS AND MV MCC.



TYPICAL REDUNDANT SUPPLY FOR 220VDC CONTROL VOLTAGE FOR TURBOGENERATION LV MCC

# 220VAC - TOPSIDE AC EMERGENCY LOADS SYSTEM



REFERENCE DOCUMENTS	
I-ET-3000.00-0000-940-P4X-002	- SYMBOLS FOR PRODUCTION UNIT DESIGN
DR-ENIP-MA-1.3	- SAFETY ENGINEERING
I-DE-3010.2Q-1200-946-P4X-001	- GENERAL ARRANGEMENT
LI-3010.2Q-5265-773-P4X-001	- EMERGENCY LOAD LIST
I-ET-3000.00-5140-700-P4X-007	- SPECIFICATION FOR GENERIC ELECTRICAL EQUIPMENT FOR OFFSHORE UNITS
I-ET-3000.00-5140-741-P4X-004	- SPECIFICATION FOR LOW-VOLTAGE GENERIC ELECTRICAL PANELS FOR OFFSHORE UNITS
I-ET-3000.00-5140-773-P4X-002	- SPECIFICATION FOR GENERIC DC UPS FOR OFFSHORE UNITS
I-ET-3000.00-5140-773-P4X-003	- SPECIFICATION FOR AC UPS FOR OFFSHORE UNITS
I-DE-3010.00-5140-797-P4X-001	- ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM
I-ET-3000.00-5140-797-P4X-001	- ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST
I-DE-3010.2Q-5265-946-P4X-002	- HULL UPS AND DC SYSTEMS ONE-LINE DIAGRAM
I-DE-3010.2Q-5140-946-P4X-003	- TOPSIDE 220V SYSTEMS ONE-LINE DIAGRAM
I-ET-3000.00-5140-797-P4X-001	- ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST
I-DE-3010.2Q-5100-940-P4X-001	- TECHNICAL SPECIFICATION - COMBINED CYCLE POWER PLANT PACKAGE
I-DE-3010.2Q-1200-944-P4X-001	- AREA CLASSIFICATION - GENERAL

- ### GENERAL NOTES AND REQUIREMENTS
- EACH AC UPS SHALL GUARANTEE NORMAL VOLTAGE IN ITS DISTRIBUTION PANEL, EVEN DURING MALFUNCTION IN ONE OF THE COMPONENTS (RECTIFIER, TRANSFORMERS, INVERTERS, ETC.). THE OUTPUT VOLTAGE SHALL BE INDEPENDENT FROM OTHER SYSTEMS, EQUIPMENT, EXTERNAL CONTROL VOLTAGES OR CONTACTS INCLUDING OTHER AC UPS, DC UPS, GENERIC DC UPS OR A/C SYSTEM.
  - ALL AC UPS SHALL BE PROVIDED WITH ALARM AND MONITORING AT A/C, IN ACCORDANCE WITH LI-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST.
  - ONLY EMERGENCY LOADS DEFINED IN LI-3010.2Q-5265-773-P4X-001 - EMERGENCY LOADS LIST SHALL BE FED BY TOPSIDE EMERGENCY DISTRIBUTION PANEL, 220VAC (PN-5265101A/B).
  - REQUIRED CAPACITY FOR BATTERIES BT-5265001A/B AND CAPACITY FOR UPS-5265001A/B ARE PRELIMINARY AND SHALL BE CONFIRMED DURING DETAILED DESIGN.
  - BATTERIES CIRCUIT-BREAKERS SHALL NOT HAVE UNDERVOLTAGE TRIP COILS (UVT) OR BE MOTOR OR SOLENOID OPERATED.
  - AC UPS TRIP FUNCTIONS SHALL BE IN ACCORDANCE WITH I-ET-3010.00-5140-773-P4X-003 - SPECIFICATION FOR AC UPS FOR OFFSHORE UNITS, IN CASE OF AC INPUT POWER SUPPLY FAILURE A SIGNAL SHALL BE PROVIDED IN ORDER TO TRIP RECTIFIER.
  - THE UPS ELECTRONIC PROTECTION SHALL TURN OFF THE BATTERIES FOR FINAL DISCHARGE VOLTAGE IN THE MINIMUM INVERTER OPERATION RANGE, LOWER THAN BATTERIES MINIMUM VOLTAGE.
  - EQUIPMENT UPS-5265001A, BT-5265001A AND PN-5265101A SHALL BE INSTALLED IN A DIFFERENT LOCATION FROM UPS-5265001B, BT-5265001B AND PN-5265101B, RESPECTIVELY.
  - FUSES OR CIRCUIT-BREAKERS TO PROTECT THE CABLES SHALL BE INSTALLED INSIDE A BOX, IN A SAFE PLACE OUTSIDE THE BATTERIES ROOM, BUT CLOSE TO IT.
  - LOADS SUPPLIED BY AC UPS SHALL BE BALANCED AMONG THE THREE PHASES.
  - ALL SIGNALING AND INSTRUMENTS OF PANELS ARE NOT SHOWN IN THIS DOCUMENT FOR MORE INFORMATION, REFER TO I-ET-3010.00-5140-797-P4X-003 - SPECIFICATION FOR AC UPS FOR OFFSHORE UNITS.
  - CAPACITY OF CIRCUIT-BREAKERS TO BE SHALL BE CONFIRMED BY DETAILED DESIGN.
  - AC UPS MINIMUM SIGNALS SHALL BE IN ACCORDANCE WITH I-DE-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM, LI-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST AND I-ET-3010.00-5140-773-P4X-003 - SPECIFICATION FOR AC UPS FOR OFFSHORE UNITS.
  - FOR MORE INFORMATION ABOUT HULL EMERGENCY LOADS DISTRIBUTION PANEL 220VAC, REFER TO I-DE-3010.2Q-5265-946-P4X-002 - HULL UPS AND DC SYSTEMS ONE-LINE DIAGRAM.
  - CIRCUIT-BREAKERS TO BYPASS STATIC SWITCHES (D19 AND D21) CAN BE CLOSED ONLY WHEN THE RESPECTIVE STATIC SWITCH IS MANUALLY TURNED FROM MAIN SUPPLY TO RESPECTIVE ALTERNATIVE SUPPLY.
  - FOR PANELS WITH POSSIBILITY TO OPERATE IN "L" CONFIGURATION WITH INTERCONNECTION CIRCUIT-BREAKERS CLOSED, IT SHALL BE PROVIDED A LOGIC TO DISABLE ONE OF INSULATION MONITORING DEVICES IN THIS CONDITION, IT SHALL ALSO BE PROVIDED A LOGIC TO ENABLE BOTH OF INSULATION MONITORING DEVICES DURING THE RETURN TO "N" CONFIGURATION.
  - IT SHALL BE POSSIBLE TO CLOSE SIMULTANEOUSLY THE CIRCUIT-BREAKERS D19 TO D22 UNDER SYNCHRONIZATION CONDITIONS FOR MOMENTARY PARALLELISM AND LOAD TRANSFER, BUT ONLY THREE OF THEM CAN REMAIN CLOSED. THE SELECTION OF THE CIRCUIT-BREAKER TO BE OPENED BY SHUNT TRIP COIL SHALL BE DONE THROUGH A SWITCH INSTALLED IN PN-5265101B. THE SYNCHRONIZATION CONDITION IS GUARANTEED BY SYNCHRONISM RELAY (ANSI FUNCTION 25). IT SHALL BE POSSIBLE TO COMMAND CIRCUIT-BREAKERS D19 TO D22 FROM PANEL PN-5265101B.
  - FOR PROCEDURE OF LOAD TRANSFER INVOLVING AC UPS, SEE I-ET-3010.00-5140-773-P4X-003 - SPECIFICATION FOR AC UPS FOR OFFSHORE UNITS.
  - MECHANICAL INTERLOCKING TO AVOID SIMULTANEOUS CLOSING OF THESE CIRCUIT-BREAKERS.
  - INTERLOCKING ACCORDING WITH I-ET-3010.00-5140-773-P4X-003 - SPECIFICATION FOR AC UPS FOR OFFSHORE UNITS, FOR START LOAD TRANSFER BOTH AC UPS SHALL BE STATIC SWITCH BYPASS ALTERNATIVE SUPPLY.
  - FOR MORE INFORMATION ABOUT INTELLIGENT RELAYS AND SIGNALS TO BE MONITORED BY THEM, REFER TO I-ET-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM AND I-ET-3010.00-5140-773-P4X-003 - SPECIFICATION FOR AC UPS FOR OFFSHORE UNITS AND LI-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST.
  - IN EMERGENCY DISTRIBUTION PANELS:  
- REDUNDANT EMERGENCY LOADS, INSTALLED IN HAZARDOUS AREA ZONE 1 OUTGOING CIRCUIT-BREAKERS (EXCLUDING DISTRIBUTION PANELS INCOMING CIRCUITS) SHALL HAVE INDIVIDUAL GROUND FAULT DETECTOR DEVICES (EFI). IN CASE OF GROUND FAULT DETECTION, EFI SHALL ALARM AND INSTANTANEOUSLY TRIP THE CIRCUIT-BREAKERS.  
- OTHER EMERGENCY LOADS SHALL BE GROUPED IN A SAME EFI. IN CASE OF GROUND FAULT DETECTION, EFI SHALL ONLY ALARM.  
FOR MORE INFORMATION REFER TO I-ET-3010.00-5140-741-P4X-004 - SPECIFICATION FOR LOW-VOLTAGE GENERIC ELECTRICAL PANELS FOR OFFSHORE UNITS.
  - THERE SHALL NOT BE NON-EMERGENCY LOADS FED FROM ANY OF THESE SYSTEMS. INCLUSION OF THESE KIND OF LOADS SHALL BE APPROVED BY PETROBRAS. IN CASE OF INCLUSION OF THESE KIND OF LOADS IN THESE SYSTEMS, WHEN INSTALLED IN EXTERNAL AREAS, THEY SHALL BE TRIPPED BY ESD SIGNALS OR LOADS SHALL BE PROPER FOR INSTALLATION IN ZONE 2 GROUP I/A TEMPERATURE T3 WHEN INSTALLED IN NON-HAZARDOUS AREAS, OTHERWISE SHALL BE CERTIFIED IN ACCORDANCE WITH I-DE-3010.2Q-1200-944-P4X-001 - AREA CLASSIFICATION - GENERAL.
  - LOW INSULATION SHALL GENERATE AN ALARM SIGNAL TO BE SENT TO TOPSIDE ELECTRICAL SYSTEM AUTOMATION CONTROLLERS.
  - THE QUANTITY OF SPARE OUTGOING CIRCUIT-BREAKERS SHALL BE ACCORDING TO I-ET-3010.00-5140-773-P4X-003 - SPECIFICATION FOR AC UPS FOR OFFSHORE UNITS.
  - AC EMERGENCY LOADS INSTALLED IN EXTERNAL NON-HAZARDOUS AREAS SHALL BE SUITABLE FOR INSTALLATION IN ZONE 2 GROUP I/A TEMPERATURE T3. OTHERWISE SHALL COMPLY WITH I-DE-3010.2Q-1200-944-P4X-001 - AREA CLASSIFICATION - GENERAL. EMERGENCY LIGHTING FIXTURES INSTALLED OUTDOORS SHALL BE SUITABLE FOR INSTALLATION IN ZONE 1 GROUP I/A TEMPERATURE T3.

### LEGEND

ESA = ELECTRICAL SYSTEM AUTOMATION	BOUNDARY LINE BETWEEN TOPSIDE AND HULL
A&C = AUTOMATION AND CONTROL SYSTEM	EQUIPMENT ENCLOSURE
HMI = HUMAN MACHINE INTERFACE	COMPARTMENT BOUNDARY
	GENERAL NETWORK COMMUNICATION
	HARDWIRED COMMUNICATION
IR	INTELLIGENT RELAY
	MOTORIZED MOULDED CASE CIRCUIT-BREAKER
	TRIP SIGNAL

REV.	DESCRIPTION	DATE	EXEC.	CHECK.	APPROV.
0	ORIGINAL ISSUE	Apr/19/24	U4QR	UR6X	UQBE

THE INFORMATION CONTAINED IN THIS DOCUMENT IS PETROBRAS PROPERTY AND MAY NOT BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY INDICATED HEREIN.  
THIS FORM IS PART OF STANDARD PETROBRAS N-301-RED-1-ANEXO-A - FIGURE A.9.  
Smart Electrical 2019 / I-DE-3010.2Q-5265-946-P4X-001

<b>PETROBRAS</b>		SRGE
CLIENT:	MARLIM LESTE E SUL	
JOB:	BASIC DESIGN - REVIT I	
AREA:	MARLIM LESTE E SUL	
TITLE:	TOPSIDE UPS AND DC SYSTEMS ONE-LINE DIAGRAM	
DESIGN	ESUP	EXEC. U4QR
SCALE	NOT TO SCALE	DRAWING
DATE	Apr/19/24	No. I-DE-3010.2Q-5265-946-P4X-001