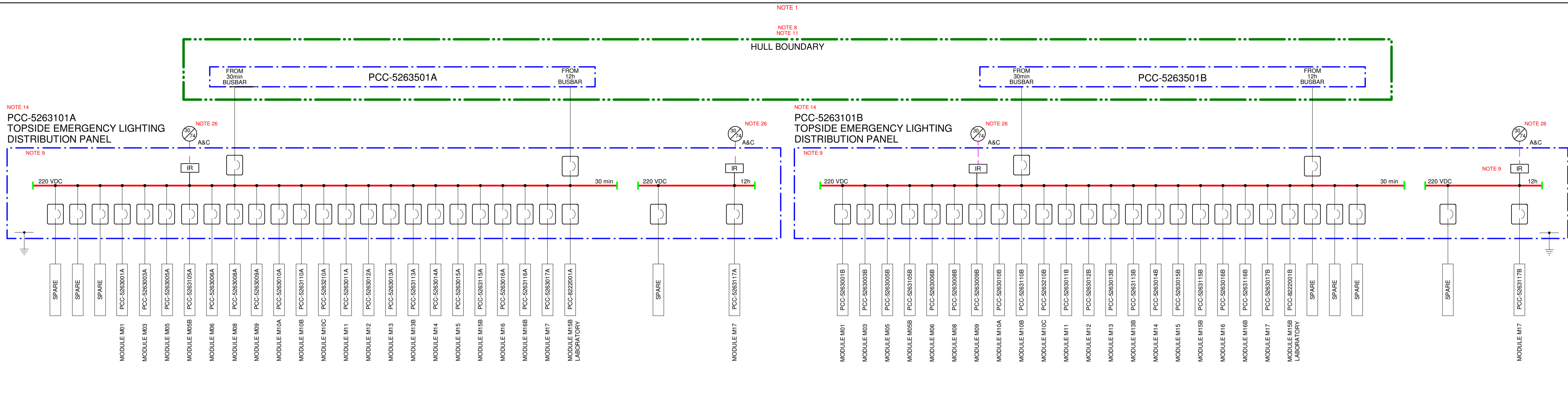
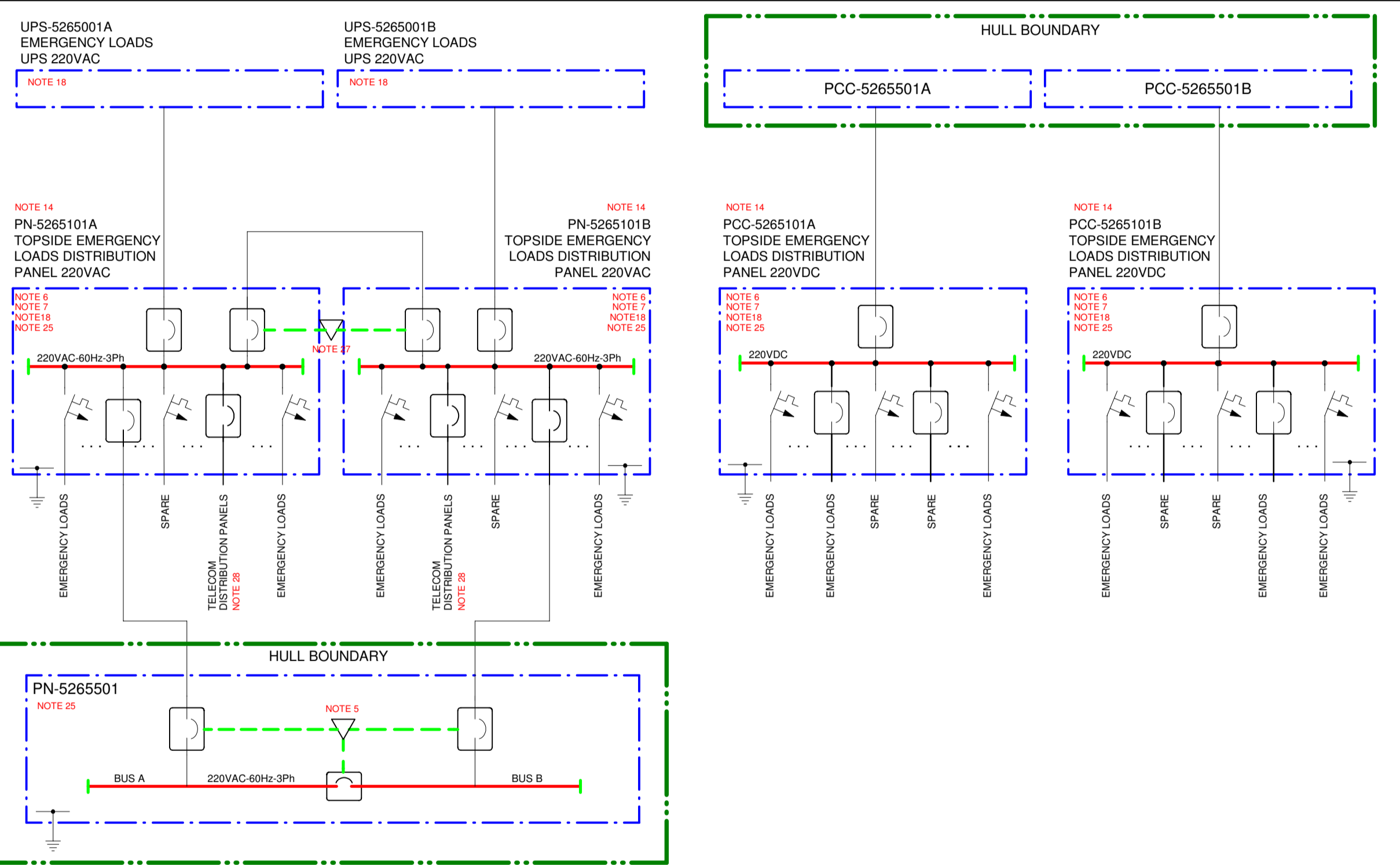


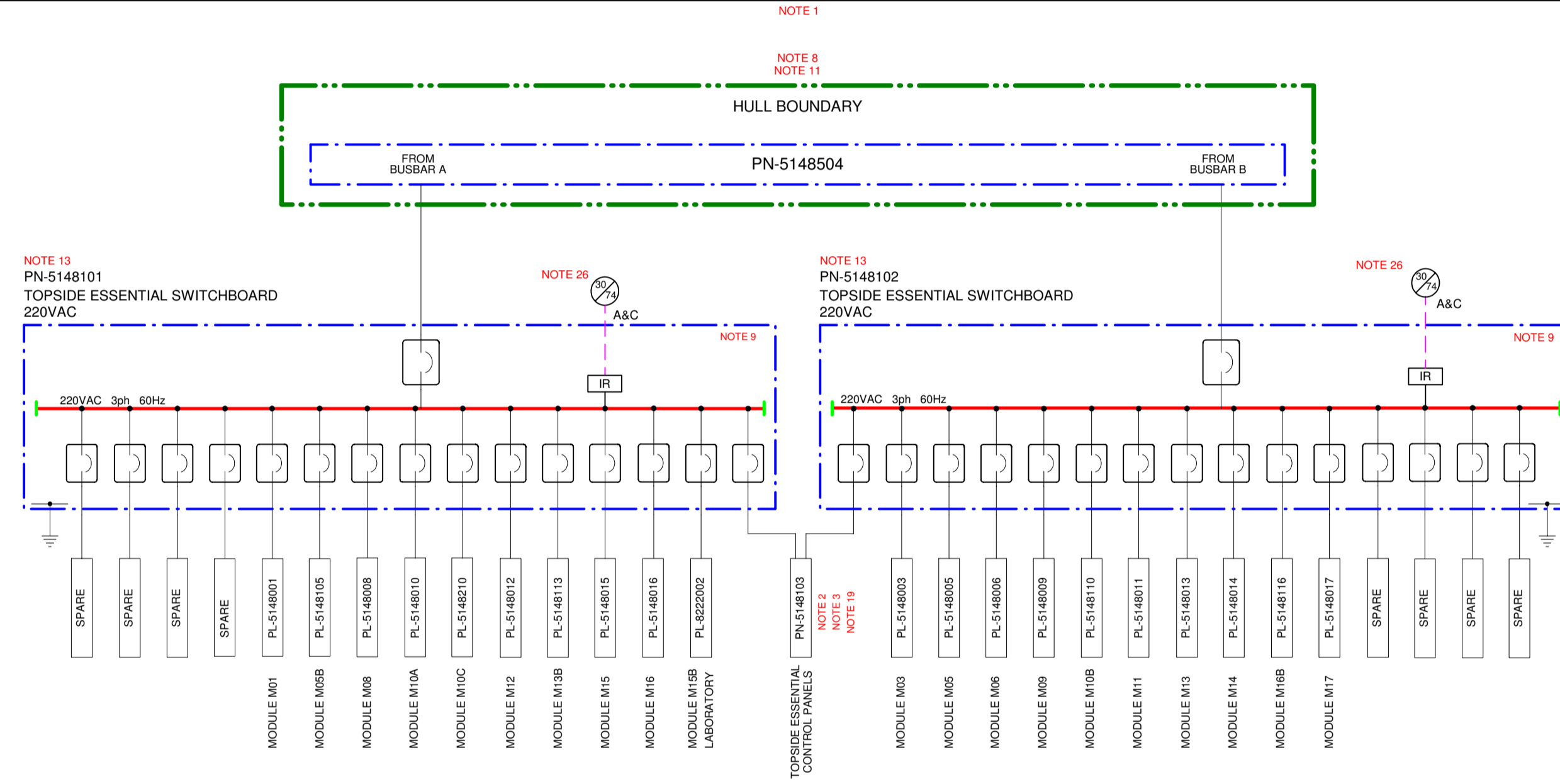
EMERGENCY LIGHTING SYSTEM - 220VDC



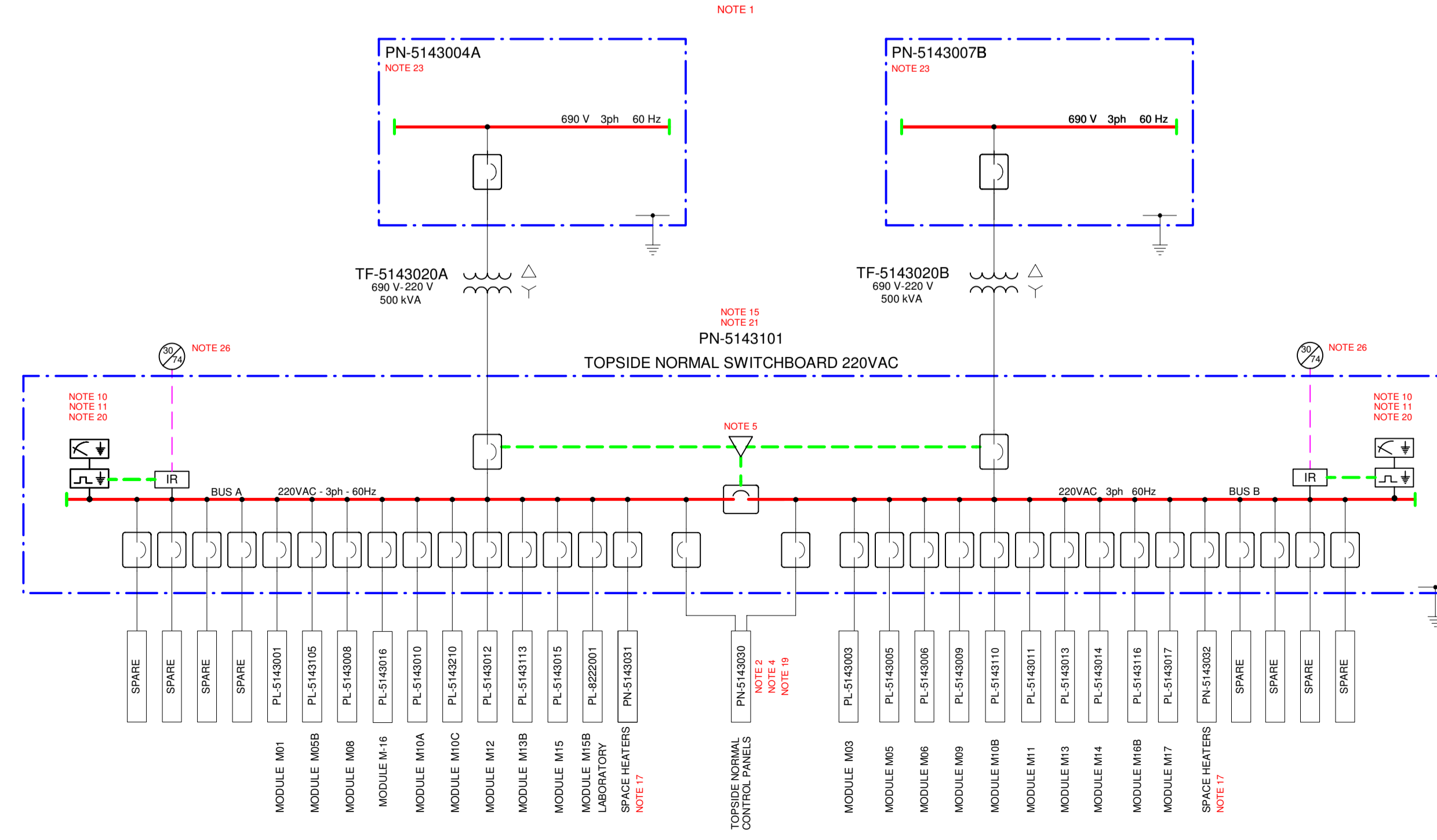
EMERGENCY LOADS



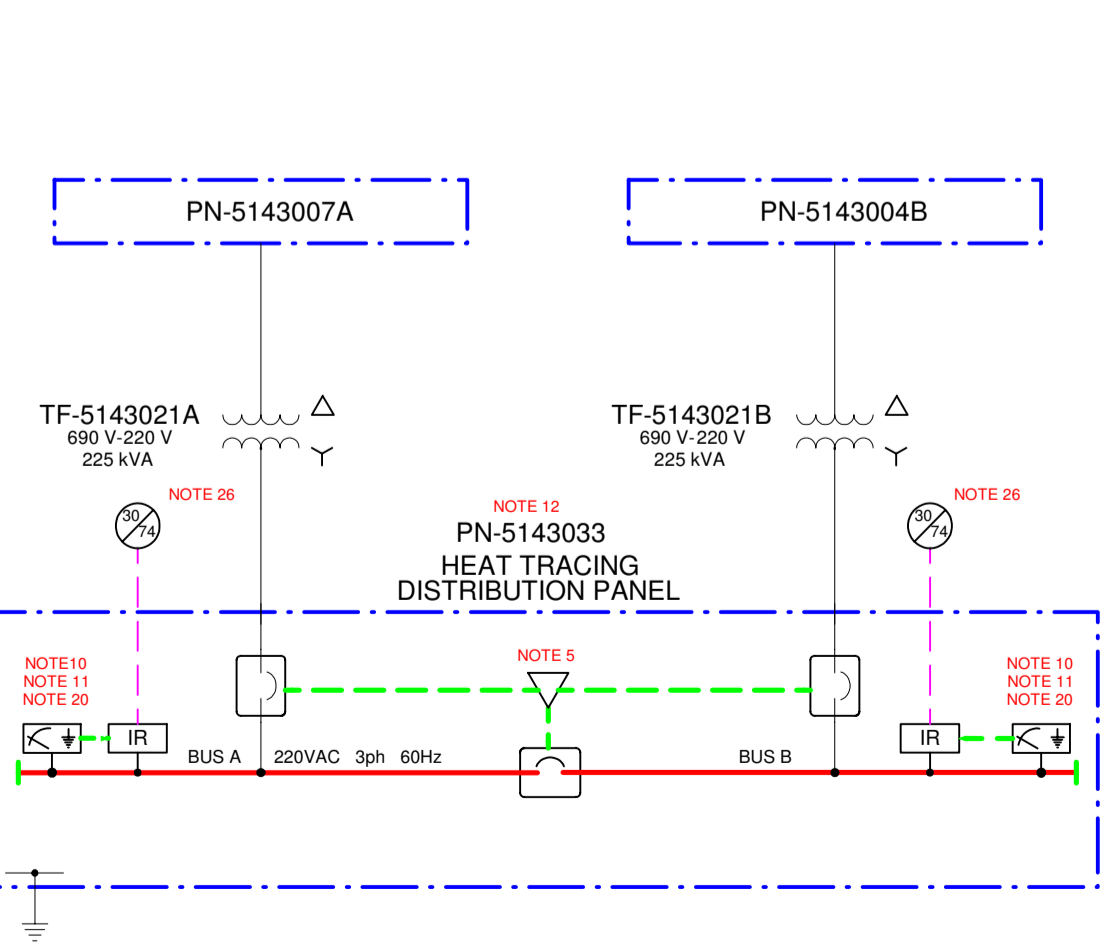
ESSENTIAL 220VAC SYSTEM



NORMAL 220VAC SYSTEM



HEAT TRACE SYSTEMS



REFERENCE DOCUMENTS

- I-ET-3000.00-0000-940-P4X-002 SYMBOLS FOR PRODUCTION UNITS DESIGN
- I-ET-3010.00-5140-700-P4X-002 - SPECIFICATION FOR ELECTRICAL MATERIAL FOR OFFSHORE UNITS
- I-ET-3010.00-5140-700-P4X-003 - ELECTRICAL REQUIREMENTS FOR PACKAGES FOR OFFSHORE UNITS
- I-ET-3010.00-5140-700-P4X-005 - REQUIREMENTS FOR HUMAN ENGINEERING DESIGN FOR ELECTRICAL SYSTEMS OF OFFSHORE UNITS
- I-ET-3010.00-5140-741-P4X-004 - SPECIFICATION FOR LOW-VOLTAGE GENERIC ELECTRICAL PANELS FOR OFFSHORE UNITS
- I-LI-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST
- I-DE-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM
- I-MD-3010.20-5140-700-P4X-008 - ELECTRICAL SYSTEM DESCRIPTIVE MEMORANDUM
- I-LI-3010.20-5265-773-P4X-001 - EMERGENCY LOADS LIST
- I-LI-3010.20-5140-700-P4X-001 - ELECTRICAL EQUIPMENT LIST
- I-DE-3010.20-5140-946-P4X-002 - KEY ONE-LINE DIAGRAM
- I-DE-3010.20-5146-946-P4X-003 - HULL 220V SYSTEMS ONE-LINE DIAGRAM
- I-DE-3010.20-5265-946-P4X-001 - TOPSIDE UPS AND DC SYSTEMS ONE-LINE DIAGRAM
- I-DE-3010.20-5265-946-P4X-002 - HULL UPS AND DC SYSTEMS ONE-LINE DIAGRAM

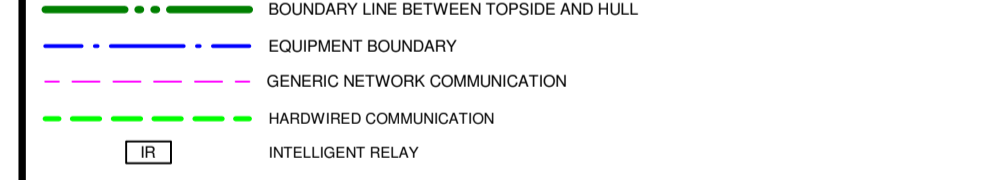
GENERAL NOTES AND REQUIREMENTS

- THE PANELS SHOWN IN THIS DOCUMENT ARE PRELIMINARY AND WERE DEFINED WITH THE PREMISE THAT EACH MODULE SHALL BE SUPPLIED WITH THE INTERNAL LIGHTING SYSTEM COMPLETED AND COMMISSIONED. THE FINAL DEFINITION OF THE PANELS SHALL BE ACCORDING TO DETAILED DESIGN. IT SHALL BE ACCEPTABLE TO REDUCE THE QUANTITY OF PANELS AMONG ADJACENT MODULES, SINCE THESE MODULES ARE SUPPLIED BY THE SAME MODULE SUPPLIER. THE DISTRIBUTION OF PANELS AMONG DIFFERENT SOURCES WAS DEFINED WITH THE PREMISE THAT FAILURE IN ONE SOURCE MINIMIZE THE RISK OF BLACK-OUT IN MODULES LOCATED IN ADJACENT POSITIONS. IN CASE OF REDUCTION OF QUANTITY OF PANELS, DETAILED DESIGN SHALL UPDATE THE DISTRIBUTION OF PANELS AMONG SOURCES IN ORDER TO KEEP THIS PREMISE.
- PN-5148103 AND PN-5143030 SHALL BE FED BY REDUNDANT FEEDERS AND SHALL HAVE A MECHANICAL INTERLOCK AVOIDING SIMULTANEOUS CLOSING OF THE TWO INCOMING CIRCUIT-BREAKERS.
- PN-5148103 SHALL FEED TOPSIDE CONTROL PANELS DEFINED TO BE FED FROM NORMAL SOURCE IN 220VAC.
- PN-5143030 SHALL FEED TOPSIDE CONTROL PANELS DEFINED TO BE FED FROM NORMAL SOURCE IN 220VAC.
- THIS INTERLOCK SHALL AVOID THAT MORE THAN TWO (2) OF THREE (3) INCOMING AND THE CIRCUIT-BREAKERS ARE CLOSED SIMULTANEOUSLY.
- LOADS INSTALLED IN TOPSIDE AND FED IN 220VDC BY PCC-5265501A/B OR IN 220VAC BY PN-5265101A/B ARE NOT PRESENTED IN THIS DIAGRAM. REFER TO I-LI-3010.20-5265-773-P4X-001 - EMERGENCY LOADS LIST.
- 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 SMALL PANELS FOR OFFSHORE UNITS.
- DESCRIPTION OF LIGHTING PANELS IS RELATED TO PANEL LOCATION, IN TERMS OF LIGHTING AND SOCKETS. NORMAL AND ESSENTIAL LIGHTINGS UNDER THE MODULES (MAIN DECK AREA) SHALL BE SUPPLIED BY CIRCUITS FED FROM LIGHTING PANELS OF RESPECTIVE MODULES.
- TOPSIDE 220V DISTRIBUTION PANELS FED BY HULL 220V PANELS SHALL HAVE EPI (EARTH FAULT INDICATORS) COMPATIBLE WITH IMD (INSULATION MONITORING DEVICES) INSTALLED IN HULL 200V PANELS.
- INSULATION MONITORING DEVICES SHALL BE SUITABLY INSTALLED TO ALLOW MONITORING WITH BARS CONNECTED IN ALL POSSIBLE CONFIGURATIONS.
- LOW INSULATION SHALL GENERATE AN ALARM SIGNAL TO BE SENT TO TOPSIDE ELECTRICAL SYSTEM AUTOMATION (PN-5144002).
- IN HEAT TRACING DISTRIBUTION PANELS, INDIVIDUAL EARTH FAULT INDICATORS SHALL BE INSTALLED FOR LOADS LOCATED AT ANY HAZARDOUS AREA OR WHICH CABLES CROSS HAZARDOUS AREA ZONE 1.
- IN ESSENTIAL DISTRIBUTION PANELS:
 - FOR REDUNDANT ESSENTIAL LOADS, INSTALLED IN HAZARDOUS AREA ZONE 1 OR WHICH CABLES CROSS HAZARDOUS AREA ZONE 1, OUTGOING CIRCUIT-BREAKERS SHALL HAVE INDIVIDUAL GROUND FAULT DETECTOR DEVICES (EFI). IN CASE OF GROUND FAULT DETECTION, EFI SHALL ALARM AND INSTANTANEOUSLY TRIP THE CIRCUIT-BREAKERS.
 - OTHER REDUNDANT ESSENTIAL LOADS AND ALL NON-REDUNDANT ESSENTIAL LOADS SHALL BE GROUPED IN A SAME EFI. IN CASE OF GROUND FAULT DETECTION, EFI SHALL ONLY ALARM.
- IN EMERGENCY DISTRIBUTION PANELS:
 - FOR REDUNDANT ESSENTIAL LOADS, INSTALLED IN HAZARDOUS AREA ZONE 1, OUTGOING CIRCUIT-BREAKERS SHALL HAVE INDIVIDUAL GROUND FAULT DETECTOR DEVICES (EFI). IN CASE OF GROUND FAULT DETECTION, EFI SHALL ALARM AND INSTANTANEOUSLY TRIP THE CIRCUIT-BREAKERS.
 - OTHER REDUNDANT EMERGENCY LOADS AND NON-REDUNDANT EMERGENCY LOADS SHALL BE GROUPED IN A SAME EFI. IN CASE OF GROUND FAULT DETECTION, EFI SHALL ONLY ALARM.
- IN NORMAL DISTRIBUTION PANELS:
 - FOR NORMAL LOADS INSTALLED IN HAZARDOUS AREA ZONE 1 OR WHICH CABLES CROSS HAZARDOUS AREA ZONE 1, OUTGOING CIRCUIT-BREAKERS SHALL HAVE INDIVIDUAL GROUND FAULT DETECTOR DEVICES (EFI). IN CASE OF GROUND FAULT DETECTION, EFI SHALL ALARM AND INSTANTANEOUSLY TRIP THE CIRCUIT-BREAKERS.
 - OTHER NORMAL LOADS SHALL BE GROUPED IN A SAME EFI. IN CASE OF GROUND FAULT DETECTION, EFI SHALL ONLY ALARM.
- SIGNALLING AND INSTRUMENTS OF PANELS ARE NOT SHOWED IN THIS DOCUMENT. FOR MORE INFORMATION, REFER TO I-ET-3010.00-5140-700-P4X-005 - REQUIREMENTS FOR HUMAN ENGINEERING DESIGN FOR ELECTRICAL SYSTEMS OF OFFSHORE UNITS.
- ALL ESD SIGNALS TRIGGERED BY FIRE OR GAS DETECTION IN TOPSIDE SHALL TRIP OUTGOING CIRCUIT-BREAKERS OF TOPSIDE NORMAL DISTRIBUTION PANEL (PN-5143101) SUPPLYING TOPSIDE SPACE HEATER PANELS (PN-5143031) AND PN-5143030, IN ORDER TO AVOID NECESSITY OF INDIVIDUAL CONTROL OF THESE CIRCUITS IN EACH LOAD.
- THIS IS A SHARED PRESENTATION OF UPS-5265001A/B, PN-5265101A/B AND PCC-5265501A/B. FOR DETAILS ABOUT THESE EQUIPMENTS, REFER TO I-DE-3010.20-5265-946-P4X-001 - TOPSIDE UPS AND DC SYSTEMS ONE-LINE DIAGRAM.
- FOR DEFINITIONS ABOUT CONTROL PANELS REQUIRED TO BE FED BY ESSENTIAL SOURCE (PN-5148103) OR BY NORMAL SOURCE (PN-5143030), SEE I-ET-3010.00-5140-700-P4X-003 - ELECTRICAL REQUIREMENTS FOR PACKAGES FOR OFFSHORE UNITS.
- FOR PANELS WITH POSSIBILITY TO OPERATE IN "L" CONFIGURATION WITH THE 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.
- ALL INCOMING AND OUTGOING CIRCUIT-BREAKERS OF NORMAL 220VAC DISTRIBUTION PANELS (PN-5143101) AND THE OUTGOING CIRCUIT-BREAKERS THAT FEED HVAC ESSENTIAL LOADS SHALL HAVE SHUNT TRIP COILS FOR EMERGENCY SHUTDOWN (ESD) PURPOSE. OTHER CIRCUIT-BREAKERS OF ESSENTIAL AND EMERGENCY 220VAC DISTRIBUTION PANELS SHALL NOT HAVE SHUNT TRIP COIL FOR ESD PURPOSE.
- BASE DESIGN CONSIDERED ALL CHEMICAL INJECTION PUMPS MOTORS WITH RATED VOLTAGE 600VAC 3PH. HOWEVER, IT SHALL BE ACCEPTABLE TO CHANGE THE RATED VOLTAGE FOR CHEMICAL INJECTION PUMPS MOTORS WITH RATED POWER UP TO 0.5 KW TO 220VAC 3PH. THIS DOCUMENT DOES NOT PRESENT PANEL FOR THIS ALTERNATIVE. GET MAILED DESIGN SHALL UPDATE THE DOCUMENT IN CASE OF APPROVAL OF THIS ALTERNATIVE. FOR DETAILS ABOUT CONDITIONS, SEE I-MD-3010.20-5140-700-P4X-002 - ELECTRICAL SYSTEM DESCRIPTIVE MEMORANDUM.
- FOR MORE DETAILS ABOUT 600V PANELS, REFER TO I-DE-3010.20-5140-946-P4X-002 - KEY ONE-LINE DIAGRAM.
- PANELS AND CIRCUIT-BREAKERS RATED CURRENT SHALL BE DEFINED DURING DETAILED DESIGN.
- FOR MORE DETAILS ABOUT INTERLOCKS IN PN-5265501, REFER TO I-DE-3010.20-5265-946-P4X-002 - HULL UPS AND DC SYSTEMS ONE-LINE DIAGRAM.
- ALL SIGNALS SENT TO A/C SHALL BE THROUGH TOPSIDE ELECTRICAL SYSTEM AUTOMATION CONTROLLERS. THIS DOCUMENT DOES NOT CONTAIN ALL SIGNALS BETWEEN EQUIPMENT AND TOPSIDE ELECTRICAL SYSTEM AUTOMATION. FOR MORE INFORMATION REFER TO I-DE-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION ARCHITECTURE DIAGRAM, I-LI-3010.00-5140-797-P4X-001 - ELECTRICAL SYSTEM AUTOMATION INTERFACE SIGNALS LIST AND I-ET-3010.00-5140-700-P4X-005 - REQUIREMENTS FOR HUMAN ENGINEERING DESIGN FOR ELECTRICAL SYSTEMS OF OFFSHORE UNITS.
- FOR INTERLOCK SEE I-DE-3010.20-5265-946-P4X-001 - TOPSIDE UPS AND DC SYSTEMS ONE-LINE DIAGRAM.
- FOR MORE DETAILS ABOUT TELECOM LOADS SEE I-DE-3010.20-5265-946-P4X-001 - TOPSIDE UPS AND DC SYSTEMS ONE-LINE DIAGRAM.

HOLD POINTS

- REPRESENTATION OF INVERTERS DOWNSTREAM PCC-5265501A/B.

LEGEND



REV.	DESCRIPTION	DATE	EXEC.	CHECK.	APPROV.
0	ORIGINAL ISSUED	Dec/29/23	U4QR	UR6X	UQBE

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THIS FORM IS PART OF STANDARD PETROBRAS N-36-REV.11-ANEX-A - FIGURE A.9
Smart Electrical 2019.17 - I-DE-3010.20-5140-946-P4X-003

PETROBRAS SRGE

CLIENT: **MARLIM LESTE E SUL**

JOB: **BASIC DESIGN - REVIT I**

AREA: **MARLIM LESTE E SUL**

TITLE: **TOPSIDES 220V SYSTEMS ONE-LINE DIAGRAM**

DESIGN	ESUP	EXEC.	U4QR	CHECK.	UR6X	APPROV.	UQBE
SCALE	NOT TO SCALE	DRAWING					
DATE	Dec/29/23	No.					

I-DE-3010.20-5140-946-P4X-003