

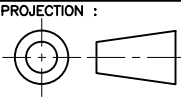
CE PLAN EST BASÉ SUR LE PLAN NO. 209-028. IL A ÉTÉ DÉVELOPPÉ UNIQUEMENT PAR MERIDIEN MARITIME À DES FINS DE PRODUCTION AVEC LA PERMISSION ÉCRITE DE ROBERT ALLAN LTÉE. ROBERT ALLAN LTÉE N'ASSUME AUCUNE RESPONSABILITÉ QUELLE QU'ELLE SOIT POUR CE PLAN MODIFIÉ. LA PROPRIÉTÉ INTELLECTUELLE DU PLAN CI-DÉCRIT APPARTIENT UNIQUEMENT À ROBERT ALLAN LTÉE ET AU CANADA. IL EST DÉFENDU DE REPRODUIRE LES PLANS ET LES DEVIS, CI-INCLUS, EN ENTIER OU EN PARTIE, OU DE LES PARTAGER AVEC UN TIERS SANS LA PERMISSION ÉCRITE DES PROPRIÉTAIRES.



COMPANY :
MÉRIDIEN MARITIME
RÉPARATION

TITLE :
ONE LINE DIAGRAM
22M

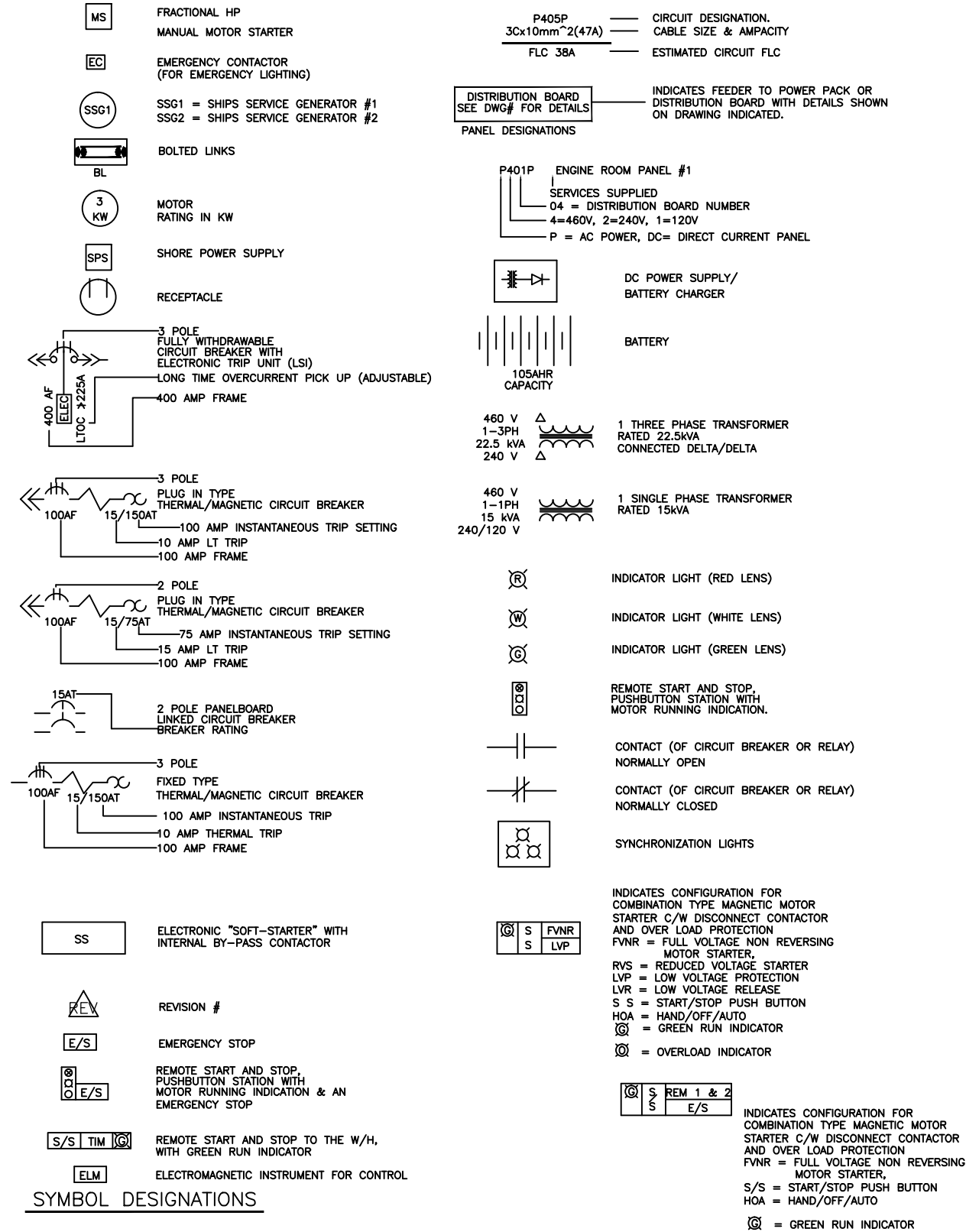
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SHEET : 1 OF 19		

SYMBOLS

NOTES:



1. THESE ONE-LINE DIAGRAMS SHOW THE ELECTRICAL SYSTEM FUNCTIONAL DESIGN. FOR EQUIPMENT DETAILS REFER TO SPECIFIC VENDOR SUPPLIED DRAWINGS. FOR INSTALLATION DETAILS REFER TO SPECIFIC LAYOUT AND ARRANGEMENT DRAWINGS.
2. THESE ONE-LINE DIAGRAMS PROVIDE INFORMATION ON THE ELECTRICAL SYSTEM CONFIGURATION AND INDICATE THE REQUIRED GENERATOR CAPACITY, CIRCUITS SUPPLIED, EQUIPMENT RATINGS IN KW OR KVA, CIRCUIT RATED LOAD CURRENT, CABLE SIZE AND AMPACITY (RATING), CIRCUIT PROTECTION DEVICE RATING AND SETTING.
3. ELECTRICAL SYSTEM SHALL BE 460 VOLT 3 PHASE 60 HZ A.C. 3 WIRE UNGROUNDED, 240 VOLT 3 PHASE 60 HZ A.C. 3 WIRE UNGROUNDED, 120 VOLT 3 PHASE 60 HZ A.C. 3 WIRE UNGROUNDED AND 24 VOLT AND 12 VOLT DC 2 WIRE UNGROUNDED.
4. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF:
- TRANSPORT CANADA SHIPS ELECTRICAL STANDARDS TP127 E
- BUREAU VERITAS
- OWNER'S SPECIFICATIONS

WHERE THE REQUIREMENTS OF THESE DRAWINGS DIFFER FROM THE ABOVE REGULATIONS, THE REQUIREMENTS OF THE REGULATIONS SHALL PREVAIL.

5. SINGLE PHASE LOADS SHALL BE CONNECTED TO THREE PHASE DISTRIBUTION SYSTEMS IN A MANNER THAT WILL ENSURE A LOAD BALANCE ACROSS THE PHASES TO WITHIN 15%.
6. THE ELECTRICAL SYSTEM SHALL BE DESIGNED:
-TO PERMIT THE TWO SHIP'S SERVICE GENERATORS TO OPERATE IN PARALLEL.
-TO PREVENT ANY GENERATOR FROM OPERATING CONTINUOUSLY IN PARALLEL WITH THE SHORE POWER SYSTEM.
-TO PREVENT ANY SHIP'S SERVICE GENERATOR FROM OPERATING CONTINUOUSLY IN PARALLEL WITH THE HARBOUR GENERATOR.
-TO PREVENT THE TWO 460/120V TRANSFORMERS FROM OPERATING IN PARALLEL ON PRIMARY AND ON SECONDARY.
-BOW THRUSTER SHALL BE FED FROM EITHER PORT OR STBD DISTRIBUTION SECTION
7. CIRCUIT BREAKERS SHALL BE OF A TYPE ACCEPTABLE TO TP127E AND SUITABLE FOR MARINE USE.
8. CIRCUIT BREAKER FRAME SIZES ARE TYPICAL. SWITCHBOARD MANUFACTURER SHALL PROVIDE STANDARD CIRCUIT BREAKER SIZES NEAREST TO THOSE INDICATED THAT PROVIDE CIRCUIT DISCRIMINATION IN ACCORDANCE WITH TP127E REQUIREMENTS.
9. CIRCUIT BREAKER OVERCURRENT SETTINGS HAVE BEEN SELECTED BASED ON THE CIRCUIT LOAD AND AMPACITY. SHORT-CIRCUIT PROTECTION DEVICES SHALL BE BASED ON:
-DISTRIBUTION CIRCUITS - 5 TIMES OVERCURRENT SETTING
-MOTOR CIRCUITS - 10 TIMES OVERCURRENT SETTING
-TRANSFORMER CIRCUITS - 12 TIMES OVERCURRENT SETTING.
10. THE MAXIMUM ASYMMETRICAL RMS CURRENT HAS BEEN CALCULATED BASED ON 10 TIMES THE GENERATOR FULL LOAD CURRENT PLUS 4 TIMES THE CONNECTED MOTOR LOAD FLC.
11. CIRCUIT PROTECTIVE DEVICES SHALL HAVE MINIMUM SHORT-CIRCUIT RATINGS AS FOLLOWS:
-460V MAIN SWITCHBOARD - 10 kA
-240/120V PANELBOARDS - 6 kA

12. CIRCUITS DESIGNATED PT SHALL BE CONNECTED TO A PREFERENTIAL (NONESSENTIAL) LOAD TRIPPING SYSTEM. IN THE EVENT THAT THE GENERATOR LOAD EXCEEDS 98% RATED LOAD, CIRCUITS MARKED PT SHALL BE TRIPPED OFF LINE.
13. FUEL OIL, LUBE OIL, HYDRAULIC OIL SYSTEM AND VENTILATION SERVICES SHALL BE CONNECTED TO A SHUTDOWN SYSTEM. THE SHUTDOWN SYSTEM SHALL BE ARRANGED TO SHUTDOWN THE CONNECTED SERVICES WHEN ACTIVATED FROM DEDICATED PUSHBUTTONS (DESIGNATED FIRE STOP) MOUNTED OUTSIDE THE ENGINE ROOM.
14. ALL ACCESSIBLE METAL PARTS OF AN ELECTRICAL INSTALLATION, OTHER THAN CURRENT-CARRYING PARTS, SHALL BE EARTHED IN ACCORDANCE WITH THE REGULATORY REQUIREMENTS.
15. CABLES SHALL BE MANUFACTURED AND RATED IN ACCORDANCE WITH THE REGULATORY REQUIREMENTS. CABLES FOR SERVICES REQUIRED IN AN EMERGENCY SHALL BE OF FIRE-RESISTANT TYPE.
16. THE CABLE SIZES SHOWN ARE SELECTED AND RATED IN ACCORDANCE WITH BV RULES PART C CHAPTER 2 SECTION 3 9.9.1 TABLE 8 FOR 45 DEGREE C AMBIENT AND CONDUCTOR INSULATION OF 85 DEGREES C. CABLES ARE RATED BASED ON 3 CONDUCTOR CABLE RATINGS FOR AC LOADS OR 2 CONDUCTOR CABLE RATINGS FOR DC LOADS.
17. GROUND FAULT CURRENT DETECTION DEVICES (GFD) SHALL MONITOR THE SYSTEM INSULATION CONTINUOUSLY AND PROVIDE AUDIBLE & VISUAL INDICATION, AND TO BE INSTALLED AT:
-460V, 240V, & 120V SWITCHBOARDS
-12V, 24V DC PANELS
18. GENERATOR AND SHORE SUPPLY CIRCUITS SHALL BE PROVIDED WITH METERING PROTECTION AND INSTRUMENTATION IN ACCORDANCE WITH REGULATORY REQUIREMENTS.
19. SHORE SUPPLY FACILITIES SHALL INCLUDE AN INFORMATION PLATE PROVIDING THE FOLLOWING DETAILS:
-SUPPLY SYSTEM VOLTAGE & FREQUENCY

-PROCEDURES FOR CONNECTING SHORE POWER CABLE

-PHASE ROTATION STATUS AND REVERSING FACILITY

-SHORE SUPPLY RECEPTACLE SHALL BE "MALE" TYPE DESIGNED TO ENSURE THAT THE GROUND CONNECTION MAKES BEFORE LINE & LOAD POLES ENGAGE, AND BREAKS AFTER LINE AND LOAD POLES DISENGAGE. ENSURE RECEPTACLE IS SECURELY BONDED TO THE SHIP'S HULL.

-FACILITIES TO BE PROVIDED TO IMPORT POWER FROM SHORE BASED SYSTEM (SPS). A MULTI PRIMARY VOLTAGE OF 460/500/550/575/600/630 V AND SINGLE SECONDARY VOLTAGE OF 460V TRANSFORMER IS TO BE PROVIDED FOR SHORE POWER SUPPLY.

20. ALL MOTOR STARTERS SHALL BE PROVIDED WITH:
-MOTOR DISCONNECT, CONTACTOR AND LOW VOLTAGE PROTECTION (LVP) UNLESS MARKED OTHERWISE.
-MOTOR RUNNING INDICATOR.
-OVERLOAD PROTECTION SET TO TRIP AT 115% FLC.

21. BATTERY CHARGERS / DC POWER SUPPLY UNITS SHALL:
-BE RATED TO SUPPLY THE BATTERY LOAD AND SIMULTANEOUSLY RECHARGE THE BATTERY WITHIN 8 HOURS.
-INCLUDE SHORT-CIRCUIT PROTECTIVE DEVICE IN THE DC OUTPUT CIRCUIT.

22. BATTERY CIRCUITS SHALL INCLUDE A VOLTMETER AND AMMETER TO INDICATE THAT THE BATTERY IS BEING MAINTAINED IN A CHARGED STATE.

23. EMERGENCY POWER SHALL BE PER TP127E FOR A GROUP 5 SHIP AND PROVIDED BY ACCUMULATOR BATTERIES RATED TO SUPPLY THEIR CONNECTED EMERGENCY LOADS AS FOLLOWS:

- DC1 24V DC MACHINERY SPACE PANEL - 3 HOUR
-DC2 24V DC EMERGENCY SERVICES PANEL - 6 HOURS
-DC3 24V DC WHEELHOUSE PANEL - 3 HOURS
-DC4 12V DC SERVICES PANEL - 3 HOURS

24. THE MAIN SWITCHBOARD SHALL BE PROVIDED WITH AN AUTOMATIC POWER MANAGEMENT SYSTEM WITH THE FOLLOWING FEATURES:
a. PREFERENTIAL TRIP FOR NON-ESSENTIAL LOADS (SEE GENERAL NOTE 12)
b. WHEN NORMAL GENERATOR LOADING REACHES 90% OF ONE(1) RATED UNIT CAPACITY, THE STAND-BY GENERATOR SHALL AUTOMATICALLY START, SYNCHRONIZE AND SHARE KW AND KVA.
c. WHEN NORMAL AND STAND-BY GENERATORS ARE OPERATING IN PARALLEL AND LOADING DROPS TO 80% OF ONE(1) RATED UNIT CAPACITY, THE STAND-BY GENERATOR SHALL AUTOMATICALLY UNLOAD, DISCONNECT FROM MAIN SWITCHBOARD AND STOP.
d. STATUS OF EACH GENERATOR SHALL BE INDICATED IN THE RELEVANT SWITCHBOARD SECTION:
- ON/OFF
- NORMAL/STAND-BY
e. EACH GENERATOR SHALL BE ARRANGED FOR REMOTE SHUTDOWN FORM THE WHEELHOUSE

25. DC CABLING AND SWITCHES SHALL BE FITTED TO ALLOW INTERCONNECTION BETWEEN MAIN ENGINE STARTING BATTERY, AND GENERATOR ENGINE STARTING BATTERY - PORT SIDE AND SIMILAR FOR STBD SIDE. THIS FACILITY SHALL BE CLEARLY MARKED TO INDICATE PURPOSE (NORMALLY OPEN: FOR BACKOUP STARTING CAPABILITY ONLY)

SHORT CIRCUIT CURRENT ESTIMATE

MAIN 460 VOLT SYSTEM:

FULL LOAD CURRENT OF TWO 170 KW GENERATORS = $2 \times 267 = 534$ AMPS
RMS ASYMMETRICAL SHORT-CIRCUIT CURRENT = 10×534 AMPS = **5340 AMPS**

MAXIMUM PROBABLE MOTOR LOAD = 200 KW = 313 AMPS
MAXIMUM PROBABLE MOTOR SHORT-CIRCUIT CONTRIBUTION = $4 \times 313 = 1256$ AMPS

MAXIMUM PROBABLE RMS VALUE OF SHORT-CIRCUIT CURRENT = $5340 + 1256 = 6596$ AMPS

MAXIMUM PROBABLE PEAK VALUE OF SHORT-CIRCUIT CURRENT BASED ON $1.8 \times \text{SQUARE ROOT } 2 \times \text{RMS VALUE} = 16791$ AMPS

MAIN 240 VOLT SYSTEM:

TRANSFORMER IS 45 KVA
TRANSFORMER SECONDARY FULL LOAD CURRENT IS 108 AMPS
MAXIMUM PROBABLE ASYMMETRICAL SHORT-CIRCUIT CURRENT BASE ON 20 TIMES TRANSFORMER F.L.C = **2160 AMPS**

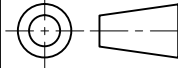
MAIN 120 VOLT SYSTEM:

TRANSFORMER IS 45 KVA
TRANSFORMER SECONDARY FULL LOAD CURRENT IS 216 AMPS
MAXIMUM PROBABLE ASYMMETRICAL SHORT-CIRCUIT CURRENT BASED ON 20 TIMES TRANSFORMER F.L.C. = **4320 AMPS**

AVT	ACCOMMODATION SPACES VENTS SHUTDOWN	UVT	UNDERVOLTAGE TRIP
FLC	FULL LOAD CURRENT	EC	EMERGENCY CONTACTOR
GFD	EARTH (GROUND) FAULT DETECTION	FOT	FUEL OIL, LUBE OIL, HYDRAULIC OIL SYSTEM SHUTDOWN
GSD	GALLEY SERVICES SHUTDOWN SYSTEM	kW	KILOWATT RATING OR METER
HTR	HEATER	PB	PUSHBUTTON
HSW	HEATER SWITCH	PS	PRESSURE SWITCH
LSW	LIMIT SWITCH	RS	REMOTE STOP
MVT	MACHINERY ROOM VENT'S SHUTDOWN	A	AMMETER
SPA	SHORE POWER AVAILABLE INDICATOR	F	FREQUENCY METER
SYN	SYNCHROSCOPE	V	VOLT METER
ER	ENGINE ROOM	ASW	AMMETER SWITCH
LSI	LONG TIME, SHORT TIME, INST. TRIP	VSW	VOLTMETER SWITCH
PT	PREFERENTIAL TRIP	CB	CIRCUIT BREAKER
EHPU	ELECTRONIC HYDRAULIC POWER UNIT	PSI	PHASE SEQUENCE INDICATOR
BT	BOW THRUSTER	PCS	PHASE CHANGE SWITCH
		VFD	VARIABLE FREQUENCY DRIVE

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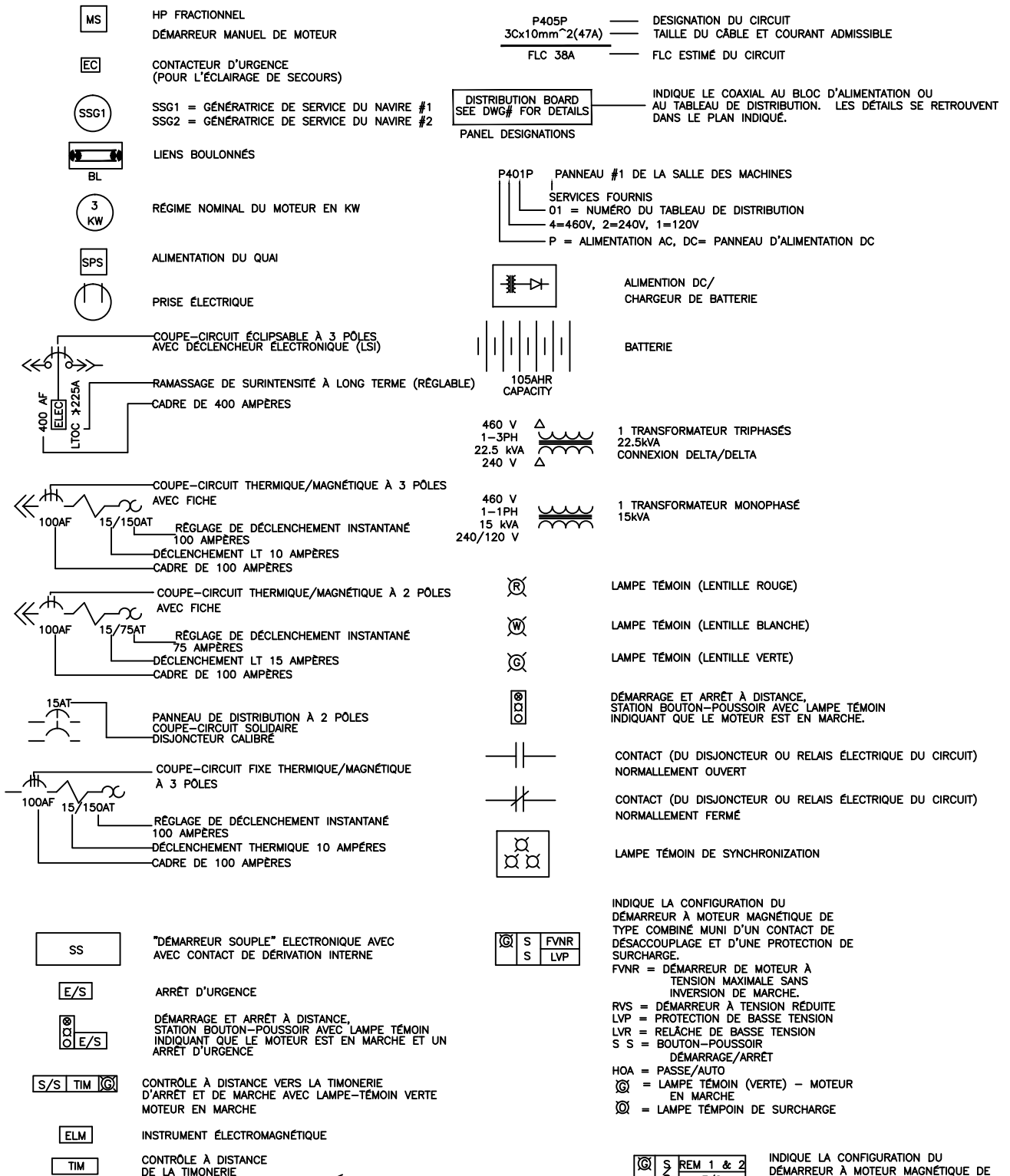
2 OF 19

COMPANY :
MÉRIDIEN MARITIME
RÉPARATION

ONE LINE DIAGRAM
22M

TITLE :

SYMBÔLES



ABBREVIATIONS

AVT	ARRÊT DE VENTILLATION DANS LES ACCOMMODATIONS	UVT	DÉCLENCHEUR DE SOUS-TENSION
FLC	COURANT DE PLEINE CHARGE	EC	CONTACT D'URGENCE
GFD	DETECTION D'UN DÉFAUT DE MISE À LA TERRE	FOT	ARRÊT DU SYSTÈME DE CARBURANT, D'HUILE DE
GSD	SYSTÈME D'ARRÊT DES SERVICES DE LA CUISINE		GRAISSAGE, ET D'HUILE HYDRAULIQUE
HTR	CHAUFFAGE	KW	KILOWATT NOMINAL OU COMPTAGE
HSW	INTERRUPTEUR DE CHAUFFAGE	PB	BOUTON-POUSOIR
LSW	INTERRUPTEUR DE FIN DE COURSE	PS	CONTACTEUR MANOMÉTRIQUE
MVT	ARRÊT DE VENTILLATION DANS LA SALLE DES MACHINES	RS	ARRÊT À DISTANCE
SPA	LAMPE TÉMOIN INDIQUANT QUE L'ALIMENTATION DE QUAÏ EST DISPONIBLE	A	AMPÈREMÈTRE
SYN	SYNCHRONOSCOPE	F	FREQUENCEMÈTRE
ER	SALLE DES MOTEURS	V	VOLTMÈTRE
LSI	DÉCLENCHEMENT LONGUE DURÉE, COURTE DURÉE, INSTANTANÉ	ASW	INTERRUPTEUR DE L'AMPÈREMÈTRE
PT	DÉCLENCHEMENT PRÉFÉRENTIEL	VSW	INTERRUPTEUR DU VOLTMÈTRE
EHPU	GROUPE HYDRAULIQUE ÉLECTRONIQUE	CB	COUPE-CIRCUIT
BT	PROPULSEUR D'ÉTRAVE	PSI	INDICATEUR DE PHASE
		PCS	INTERRUPTEUR DE CHANGEMENT DE PHASE
		VFD	MÉCANISME D'ENTRAÎNEMENT À FRÉQUENCE VARIABLE

NOTES:

- LES DIAGRAMMES LINÉAIRES PRÉSENTS DÉMONTRENT LE FONCTIONNEMENT DU SYSTÈME ÉLECTRIQUE. SE REPORTER AUX PLANS DES VENDEURS POUR LES DÉTAILS D'ÉQUIPEMENT. SE REPORTER AUX PLANS D'ENSEMBLE POUR LES DÉTAILS D'INSTALLATION.
- LES DIAGRAMMES LINÉAIRES PRÉSENTS DÉMONTRENT LA CONFIGURATION DU SYSTÈME ÉLECTRIQUE ET INDIQUENT LA CAPACITÉ REQUISE DE LA GÉNÉRATRICE, LES CIRCUITS FOURNIS, LE RÉGIME NOMINAL EN KW OU KVA, LE COURANT DE CHARGE NOMINAL, LE COURANT ADMISSIBLE ET DIMENSIONS DES CÂBLES, ET LE RÉGIME NOMINAL/ RÉGLAGE DU CIRCUIT DE PROTECTION.
- LE SYSTÈME ÉLECTRIQUE DOIT COMPRENDRE: 3 FILS NON MIS À LA MASSE 460 VOLT TRIPHASÉ 60 HZ CA, 3 FILS NON MIS À LA MASSE 240 VOLT TRIPHASÉ 60 HZ CA, 3 FILS NON MIS À LA MASSE 120 VOLT TRIPHASÉ 60 HZ CA, ET 2 FILS NON MIS À LA MASSE 24 VOLT ET 12 VOLT CC.
- L'INSTALLATION DEVRA SE FAIRE D'APRÈS LES EXIGENCES SUIVANTES:
 - TRANSPORTS CANADA: NORMES D'ÉLECTRICITÉ RÉGISSANT LES NAVIRES TP127 E
 - BUREAU VÉRITAS
 - SPECIFICATIONS DU PROPRIÉTAIRE

LORSQUE LES EXIGENCES DU PRÉSENT PLAN DIFFÉRENT DES EXIGENCES INDIQUÉES CI-HAUT, LES EXIGENCES CI-HAUT L'EMPORTENT.

- LES CHARGES MONOPHASÉES DOIVENT ÊTRE RELIÉES AUX SYSTÈMES DE DISTRIBUTION TRIPHASÉS DE FAÇON À ASSURER UN ÉQUILIBRE DES CHARGES ENTRE LES PHASES (JUSQU'À UNE MARGE D'ERREUR DE 15%).
- LE SYSTÈME ÉLECTRIQUE DEVRA ÊTRE INSTALLÉ DE FAÇON À:
 - PERMETTRE LES DEUX GÉNÉRATRICES DE SERVICE DU NAVIRE D'OPÉRER EN PARALLÈLE.
 - EMPÊCHER UNE GÉNÉRATRICE DE FONCTIONNER EN PARALLÈLE DE FAÇON CONTINUE AVEC LE SYSTÈME D'ALIMENTATION DE QUAÏ.
 - EMPÊCHER UNE GÉNÉRATRICE DE SERVICE DE FONCTIONNER EN PARALLÈLE DE FAÇON CONTINUE AVEC LA GÉNÉRATRICE DE PORT.
 - EMPÊCHER LES DEUX TRANSFORMATEURS 460/120V DE FONCTIONNER EN PARALLÈLE EN MODE PRIMAIRE ET SECONDAIRE.
 - ALIMENTER LE PROPULSEUR D'ÉTRAVE À PARTIR DE LA SECTION DE DISTRIBUTION BÂBORD OU TRIBORD.
- LES COUPE-CIRCUITS DOIVENT ÊTRE DE TYPE APPROUVÉS D'APRÈS LE TP127E, ET CONVENABLES À UNE APPLICATION MARITIME.
- LES CADRES DES COUPE-CIRCUITS SONT DE TAILLES TYPIQUES. LES FABRICANTS DOIVENT FOURNIR DES COUPE-CIRCUITS TYPIQUES DE TAILLE INDIQUÉE (OU LE PLUS PROCHE POSSIBLE) ET QUI FOURNISSENT UNE DISCRIMINATION DU CIRCUIT D'APRÈS LES EXIGENCES DU TP127E.
- LES RÉGLAGES DE SURINTENSITÉ DES COUPE-CIRCUITS FURENT ÉTABLIS D'APRÈS LA CHARGE ET LE COURANT ADMISSIBLE DU CIRCUIT. LES DISPOSITIFS DE PROTECTION CONTRE LES COURT-CIRCUITS DOIVENT ÊTRE ÉTABLIS D'APRÈS:
 - CIRCUITS DE DISTRIBUTION - 5 FOIS LE RÉGLAGE DU SUR-COURANT
 - CIRCUITS DES MOTEURS - 5 FOIS LE RÉGLAGE DU SUR-COURANT
 - CIRCUITS DES TRANSFORMATEURS - 12 FOIS LE RÉGLAGE DU SUR-COURANT

- LE COURANT RMS MAXIMAL ASYMÉTRIQUE A ÉTÉ CALCULÉ EN FONCTION DE 10 FOIS LE COURANT DE PLEINE CHARGE DE LA GÉNÉRATRICE, PLUS 4 FOIS LE FLC DE LA CHARGE LIÉE DU MOTEUR.
- LE RÉGLAGE MINIMUM DU COURT-CIRCUIT DES DISPOSITIFS DE PROTECTION DU CIRCUIT DOIT ÊTRE COMME SUIT:
 - TABLEAU DE DISTRIBUTION PRINCIPAL 460V - 10 kA
 - PANNEAU DE DISTRIBUTION 240/120V - 6 kA
- LES CIRCUITS DE DÉSIGNATION PT DOIVENT ÊTRE LIÉS À UN SYSTÈME DE DÉCLENCHEMENT DE CHARGE PRÉFÉRENTIEL. DANS LE CAS OÙ LA CHARGE DE LA GÉNÉRATRICE DÉPASSE 98% DE LA CHARGE NOMINALE, LES CIRCUITS PT DOIVENT ÊTRE DÉCLENCHÉS HORS-LIGNE.
- LES SYSTÈMES DE CARBURANT, D'HUILE DE GRAISSAGE, D'HUILE HYDRAULIQUE ET DE VENTILATION DOIVENT ÊTRE LIÉS À UN SYSTÈME D'ARRÊT. LE SYSTÈME D'ARRÊT DOIT ÊTRE CONFIGURÉ DE FAÇON À PERMETTRE L'ARRÊT DU SYSTÈME À PARTIR DE BOUTONS-POUSOIR (ARRÊTS PARE-FEU DÉSIGNÉS) PLACÉS À L'EXTÉRIEUR DE LA SALLE DES MACHINES.
- TOUTES PIÈCES EN MÉTAL D'ACCÈS FACILE, SAUF LES PIÈCES SOUS TENSION, D'UNE INSTALLATION ÉLECTRIQUE DOIVENT ÊTRE RELIÉES À LA TERRE D'APRÈS LES NORMES DE CLASSIFICATION DU NAVIRE.
- LES CÂBLES DOIVENT ÊTRE FABRIQUÉS ET QUALIFIÉS D'APRÈS LES NORMES DE CLASSIFICATION DU NAVIRE. LES CÂBLES COMPRIS DANS UN SYSTÈME D'URGENCE DOIVENT ÊTRE RÉSISTANTS AU FEU.
- LES CÂBLES INDIQUÉS FURENT SÉLECTIONNÉS ET QUALIFIÉS D'APRÈS LES RÈGLEMENTS BV, PARTIE C, CHAPITRE 2, SECTION 3 9.9.1 TABLEAU 8, POUR UNE TEMPÉRATURE AMBIANTE DE 45 DEGRÉS C ET UNE ISOLATION DU CONDUCTEUR DE 85 DEGRÉS C. LES CÂBLES SONT QUALIFIÉS D'APRÈS LES QUALIFICATIONS D'UN CÂBLE TRIFILAIRE POUR LES CHARGES CA, ET LES QUALIFICATIONS D'UN CÂBLE À 2 FILS POUR LES CHARGES CC.
- LES DISPOSITIFS DE DÉTECTION DE DÉFAUT À LA TERRE (GFD) DEVRONT SURVEILLER, DE FAÇON CONTINUE, L'ISOLATION DU SYSTÈME ET FOURNIR UNE INDICATION AUDIBLE ET VISUELLE. LES GFD DOIVENT ÊTRE INSTALLÉS AUX ENDROITS SUIVANTS:
 - TABLEAUX DE CONTRÔLE 460V, 240V, & 120V
 - PANNEAUX DC 12V, 24V
- FOURNIR UNE PROTECTION ET INSTRUMENTATION DE COMPTAGE AUX CIRCUITS DE LA GÉNÉRATRICE ET DE L'ALIMENTATION DE PORT D'APRÈS LES EXIGENCES DE CLASSIFICATION DU NAVIRE.
- LES INSTALLATIONS D'ALIMENTATION DE PORT DEVRONT ÊTRE MUNIES D'UNE PLAQUE D'INFORMATION FOURNISSANT LES DÉTAILS SUIVANTS:
 - VOLTAGE ET FRÉQUENCE DU SYSTÈME D'ALIMENTATION
 - PROCÉDURES DE CONNEXION DES CÂBLES D'ALIMENTATION AU QUAÏ.
 - L'ÉTAT DE SUCCESSION DE PHASES ET L'INSTALLATION DE RENVERSEMENT.

LES PRISES D'ALIMENTATION DE QUAÏ DOIVENT ÊTRE DE TYPE 'MÂLE' ET CONFIGURÉES DE FAÇON À ASSURER QUE LA CONNEXION DE MISE À TERRE SOIT ÉTABLIE AVANT QUE LES PÔLES DE LIGNES ET DE CHARGES ENTRENT EN PRISE, ET QU'ELLE SE COUPE APRÈS QUE LES PÔLES DE LIGNES ET DE CHARGES SE RELÂCHENT. ASSURER QUE LES PRISES SOIENT BIEN FIXÉES À LA COQUE.

FOURNIR DES INSTALLATIONS PERMETTANT L'IMPORTATION D'ÉNERGIE À PARTIR DU SYSTÈME D'ALIMENTATION DE QUAÏ (SPS). FOURNIR UN TRANSFORMATEUR DE VOLTAGE MULTI-PRIMAIRE DE 460/500/550/575/600/630 V ET UN VOLTAGE SECONDAIRE-SIMPLE DE 460V POUR L'ALIMENTATION DE QUAÏ.

- LES DÉMARREURS DE MOTEUR DOIVENT ÊTRE MUNIS DES SUIVANTS:
 - DÉSACCOUPLEUR DE MOTEUR, PROTECTION DE CONTACT ET DE BASSE TENSION (LVP), À MOINS D'INDICATION CONTRAIRE.
 - INDICATEUR DE POSITION
 - PROTECTION DE SURCHARGE RÉGLÉE À 115% FLC.
- LES CHARGEURS DE BATTERIES/ INSTALLATIONS D'ALIMENTATION CC DOIVENT:
 - ÊTRE RÉGLÉS DE FAÇON À ALIMENTER LA CHARGE DE LA BATTERIE ET SIMULTANÉMENT RECHARGER LA BATTERIE DANS UN DÉLAIS DE 8 HEURES.
 - MUNIS D'UN DISPOSITIF DE PROTECTION DE COURT-CIRCUIT DANS LE CIRCUIT DE SORTIE CC.
- LES CIRCUITS DES BATTERIES DOIVENT INCLURENT UN VOLTMÈTRE ET UN AMPÈREMÈTRE AFIN DE DÉMONSTRER QUE LA BATTERIE DEMEURE DANS UN ÉTAT CHARGÉ.
- L'ALIMENTATION D'URGENCE DOIT SE CONFORMER AUX EXIGENCES DU TP127E POUR UN NAVIRE DU GROUPE 5. DE PLUS, LE SYSTÈME DOIT ÊTRE ALIMENTÉ À PARTIR DE BATTERIES D'ACCUMULATEUR AVEC CONNECTIONS NOMINALES AUX CHARGES D'URGENCE COMME SUIT:

PANNEAU DE LA SALLE DES MACHINES	DC1 24V CC	- 3 HEURES
PANNEAU DE SERVICES D'URGENCE	DC2 24V CC	- 6 HEURES
PANNEAU DE LA TIMONERIE	DC3 24V CC	- 3 HEURES
PANNEAU DE SERVICES	DC4 12V CC	- 3 HEURES
- LE TABLEAU DE DISTRIBUTION PRINCIPAL DOIT ÊTRE MUNI D'UN SYSTÈME AUTOMATIQUE DE SURVEILLANCE DE PUISSANCE AVEC LES CARACTÉRISTIQUES SUIVANTES:
 - DÉCLENCHEUR PRÉFÉRENTIEL POUR LES CHARGES NON-ESSENTIELLES (SE REPORTER À LA NOTE 12)
 - LORSQUE LA CHARGE DE LA GÉNÉRATRICE PRINCIPALE ATTEINT 90% DE LA CAPACITÉ D'UN (1) APPAREIL, LA GÉNÉRATRICE DE RÉSERVE DOIT AUTOMATIQUEMENT DÉMARRER, SE SYNCHRONIZER ET PARTAGER LE KW ET KVA.
 - LORSQUE LA GÉNÉRATRICE PRINCIPALE ET DE RÉSERVE MARCHENT EN PARALLÈLE, ET QUE LA CHARGE BAISSE À 80% DE LA CAPACITÉ NOMINAL D'UN (1) APPAREIL, LA GÉNÉRATRICE DE RÉSERVE DEVRA AUTOMATIQUEMENT SE DÉCHARGER, SE DÉBRANCHER DU TABLEAU DE DISTRIBUTION PRINCIPAL ET S'ARRÊTER.
 - L'ÉTAT DE CHAQUE GÉNÉRATRICE DEVRA ÊTRE INDIQUÉ DANS LA PARTIE CORRESPONDANTE DU TABLEAU DE DISTRIBUTION:
 - "ON"/"OFF"
 - "NORMAL"/"STAND-BY"
 - CHAQUE GÉNÉRATRICE DEVRA ÊTRE CONFIGURÉE DE FAÇON À PERMETTRE UN ARRÊT À DISTANCE À PARTIR DE LA TIMONERIE.
- LES CÂBLES ET LES INTERRUPTEURS DC DEVRONT ÊTRE INSTALLÉS DE FAÇON À PERMETTRE L'INTER-CONNEXION ENTRE LA BATTERIE DE DÉMARRAGE DU MOTEUR PRINCIPAL ET DE LA GÉNÉRATRICE (BÂBORD ET TRIBORD). CETTE INSTALLATION DEVRA ÊTRE BIEN IDENTIFIÉE AFIN D'INDIQUER L'INTENTION (NORMALEMENT OUVERT: POUR LE DÉMARRAGE DE RÉSERVE SEULEMENT)

ESTIMATION DU COURANT DE COURT-CIRCUIT

SYSTÈME PRINCIPAL 460 VOLT:

COURANT PLEINE CHARGE DE DEUX GÉNÉRATRICES 170 KW = 2 * 267 = 534 AMPÈRES
COURANT COURT-CIRCUIT RMS ASYMÉTRIQUE = 10 X 534 AMPÈRES = **5340 AMPÈRES**

CHARGE MAXIMALE PROBABLE DU MOTEUR = 200 KW = 313 AMPÈRES
CONTRIBUTION MAXIMALE PROBABLE DE COURT-CIRCUIT DU MOTEUR = 4 x 313 = **1256 AMPÈRES**

VALEUR RMS MAXIMALE PROBABLE DU COURT-CIRCUIT
COURANT = 5340 + 1256 = **6596 AMPÈRES**

VALEUR DE CRÊTE MAXIMALE PROBABLE DU COURANT DU COURT-CIRCUIT
D'APRÈS 1.8 x RACINE CARRÉE DE 2 x VALEUR RMS = **16791 AMPÈRES**

SYSTÈME PRINCIPALE 240 VOLT:

TRANSFORMATEUR EST DE 45 KVA
COURANT DE PLEINE CHARGE SECONDAIRE DU TRANSFORMATEUR EST 108 AMPÈRES
COURANT ASYMÉTRIQUE MAXIMAL PROBABLE DU COURT-CIRCUIT
D'APRÈS 20 FOIS LE FLC DU TRANSFORMATEUR = **2160 AMPÈRES**

SYSTÈME PRINCIPAL 120 VOLT:

TRANSFORMATEUR EST DE 45 KVA
COURANT DE PLEINE CHARGE SECONDAIRE DU TRANSFORMATEUR EST 216 AMPÈRES
COURANT ASYMÉTRIQUE MAXIMAL PROBABLE DU COURT-CIRCUIT
D'APRÈS 20 FOIS LE FLC DU TRANSFORMATEUR = **4320 AMPÈRES**

		Garde côtière canadienne Canadian Coast Guard	
NAVIRE 22M VESSEL COQUE # / HULL # 010		PROJECT TITLE : Navire semi-hauturier de recherche halieutique Near Shore Fisheries Research Vessels	
PROJECT # : MR09-1113	DRAWING FILE : ISV22-60000MM21.DWG	DATE : 31/08/2012	
DRAWN BY : MM	DRAWING # : 009-60000	REV : 21	SHEET : 3 OF 19

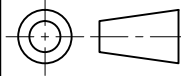


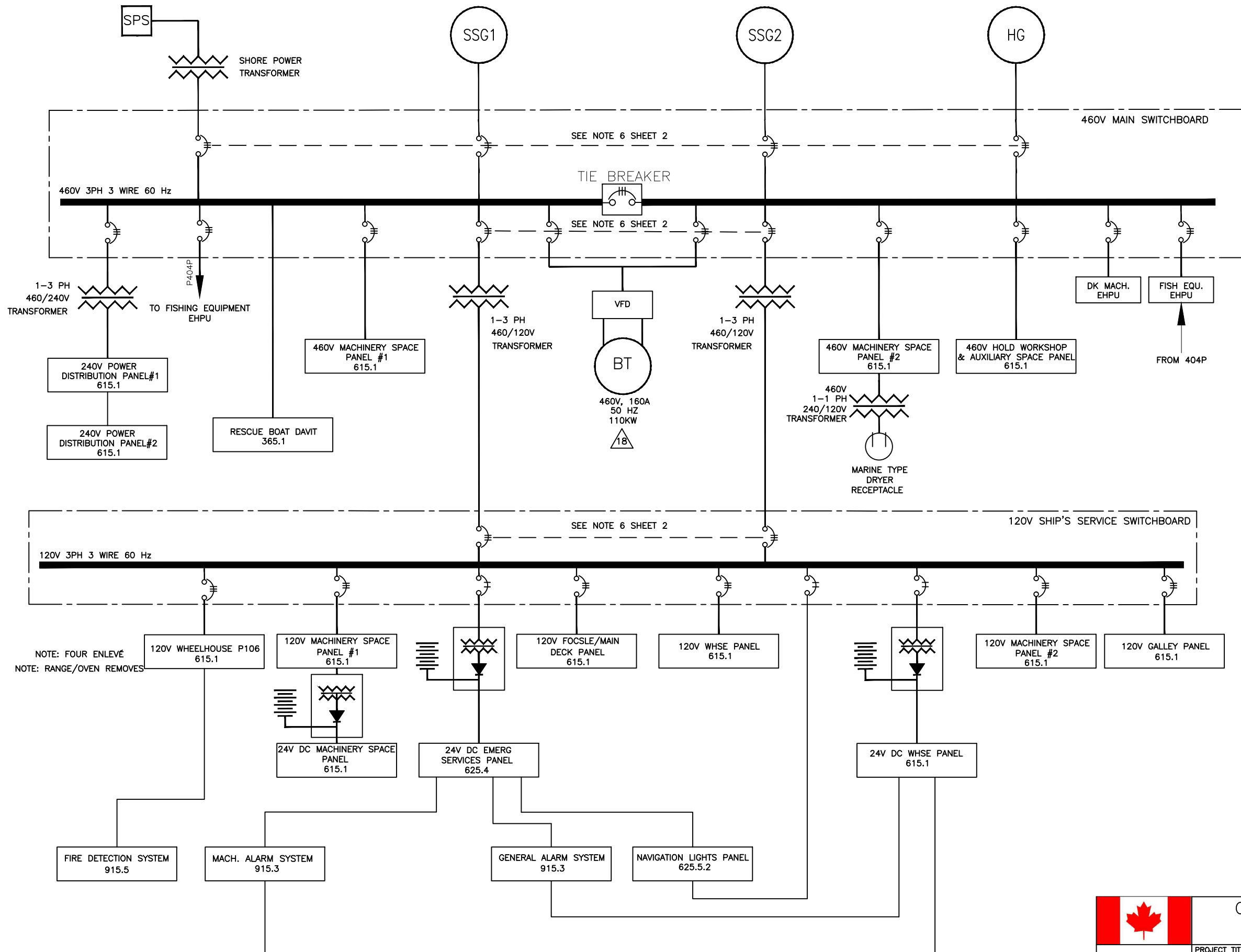
COMPANY :
MÉRIDIEN MARITIME
RÉPARATION

TITLE :
ONE LINE DIAGRAM
22M

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PROJECTION :





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Canadian Coast Guard

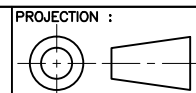
PROJECT TITLE :
Navire semi-hauturier de recherche halieutique
Near Shore Fisheries Research Vessels

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DRAWN BY : MM	DRAWING # : 009-60000	REV : 21	SHEET : 4 OF 19

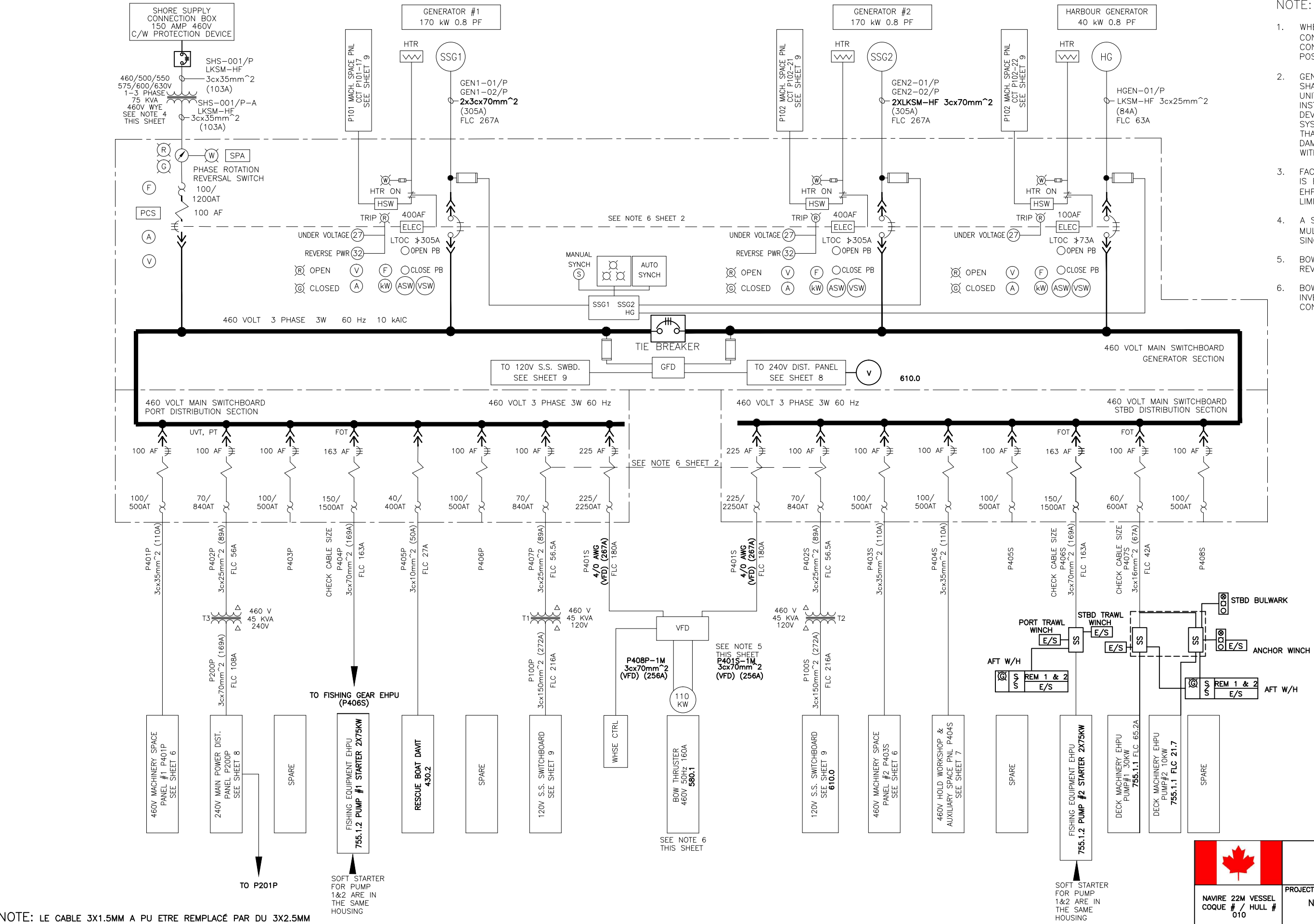
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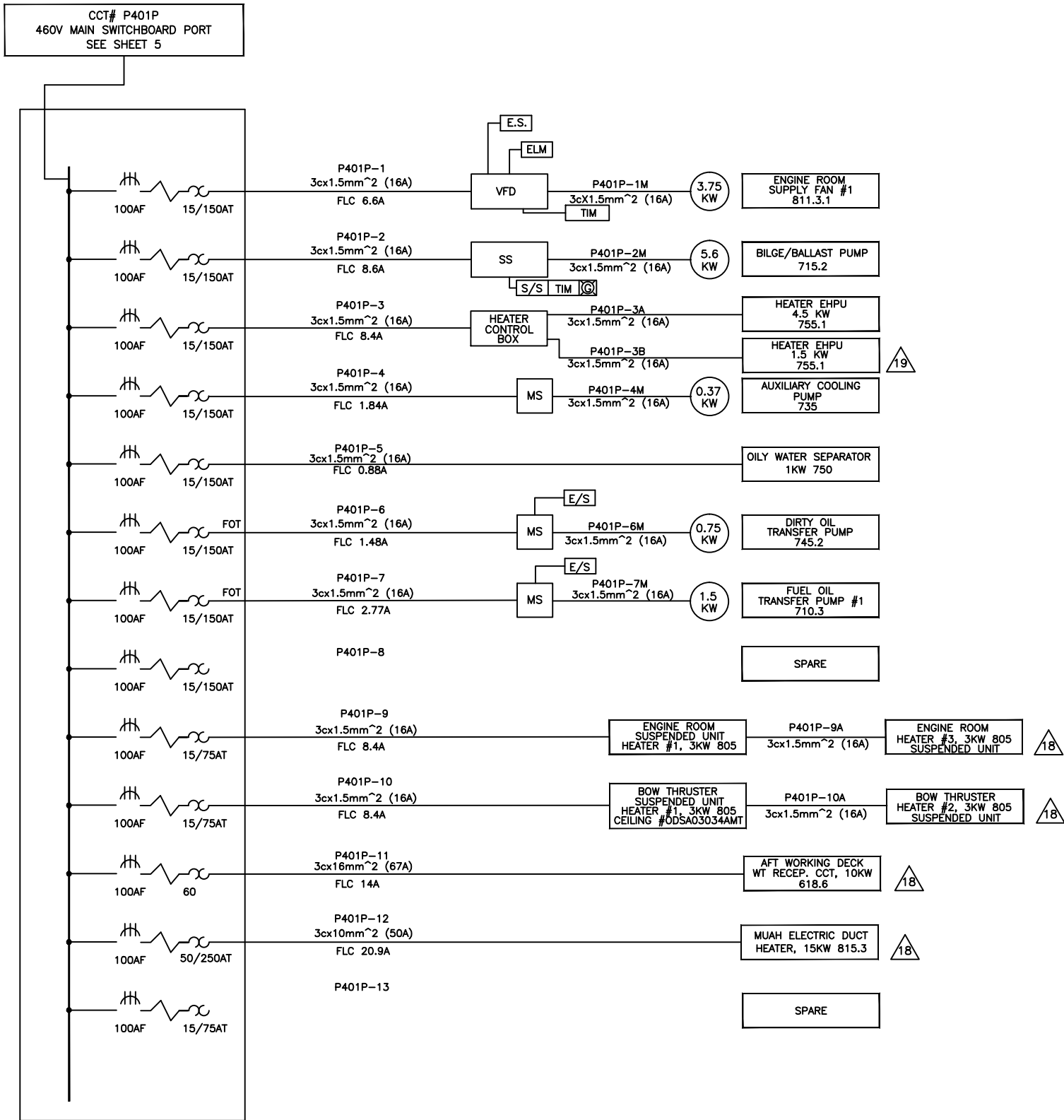


- NOTE:
- WHERE MOTORS ARE SHOWN WITHOUT LOCAL STOP/START CONTROL, USE START/STOP PUSHBUTTONS ON MOTOR CONTROLLER AND LOCATE CONTROLLER AS CLOSE AS POSSIBLE AND WITHIN CLEAR SIGHT OF THE MOTOR.
 - GENERATOR AND DISTRIBUTION CIRCUIT BREAKER(S) SHALL BE FITTED WITH ELECTRONIC ADJUSTABLE TRIP UNITS HAVING LONG TIME, SHORT TIME AND INSTANTANEOUS TRIP ELEMENTS, IF NECESSARY. TRIP DEVICE TO BE SET IN ACCORDANCE WITH AN APPROVED SYSTEM PROTECTION AND COORDINATION STUDY SUCH THAT GENERATOR IS PROTECTED AGAINST THERMAL DAMAGE AND SATISFACTORY COORDINATION IS OBTAINED WITH ALL SWITCHBOARD OUTGOING CIRCUIT BREAKERS.
 - FACILITIES SHALL BE PROVIDED TO ENSURE THAT THERE IS ENOUGH POWER AVAILABLE ONLINE BEFORE STARTING EHPUs/PUMPS SO THAT THE SYSTEM'S VOLTAGE DROP IS LIMITED TO MEET THE CLASS REQUIREMENTS.
 - A SPECIAL SHORE POWER TRANSFORMER WITH MULTI-INPUT VOLTAGE LEVEL (FROM 460V TO 630V) AND SINGLE OUTPUT VOLTAGE AT 460V SHALL BE PROVIDED.
 - BOW THRUSTER VARIABLE FREQUENCY DRIVE SHALL BE REVERSING AND ARRANGED FOR WHEELHOUSE CONTROL.
 - BOW THRUSTER DRIVE MOTOR SHALL BE SUITABLE FOR INVERTER VARIABLE SPEED DUTY, AND WITH PROPER CONSIDERATION GIVEN TO COOLING AT LOW RPM.

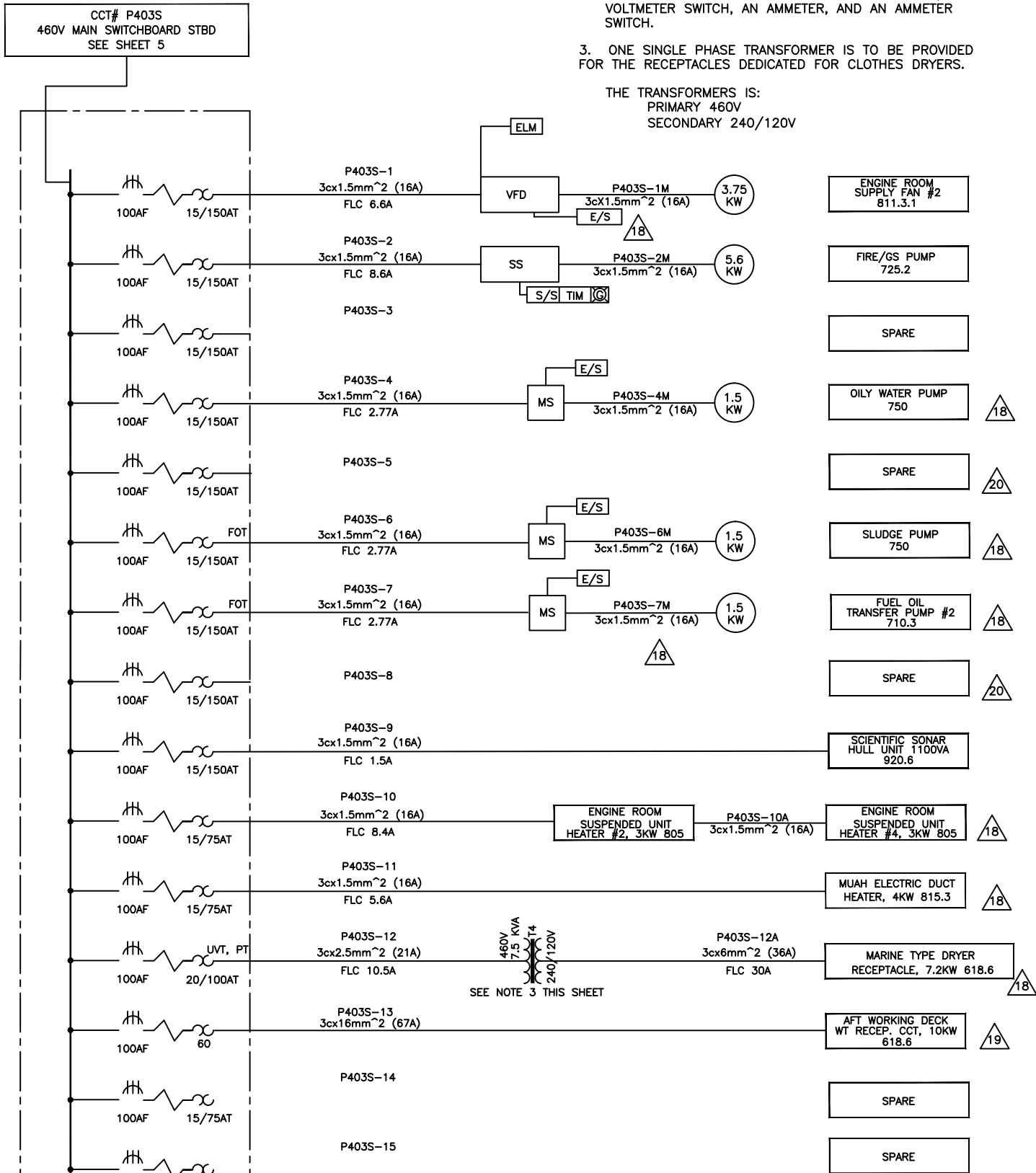


NOTE: LE CABLE 3X1.5MM A PU ETRE REMPLACÉ PAR DU 3X2.5MM

P401P 460V MACHINERY SPACE PANEL #1
460V, 3PH, 3W, 100A, 10KAIC, 13 POLES
SEE NOTE 2 THIS SHEET



P403S 460V MACHINERY SPACE PANEL #2
460V, 3PH, 3W, 100A, 10KAIC, 15 POLES
SEE NOTE 2 THIS SHEET



NOTE:

1. IN THE EVENT OF A FIRE, CCTS WITH DESIGNATED MVT, FOT SHALL BE TRIPPED VIA THEIR FEEDER CIRCUIT BREAKERS ON THEIR RESPECTIVE PANELS.
2. EACH PANEL SHALL BE FITTED WITH A VOLTMETER, A VOLTMETER SWITCH, AN AMMETER, AND AN AMMETER SWITCH.
3. ONE SINGLE PHASE TRANSFORMER IS TO BE PROVIDED FOR THE RECEPTACLES DEDICATED FOR CLOTHES DRYERS.

THE TRANSFORMERS IS:
PRIMARY 460V
SECONDARY 240/120V

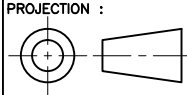
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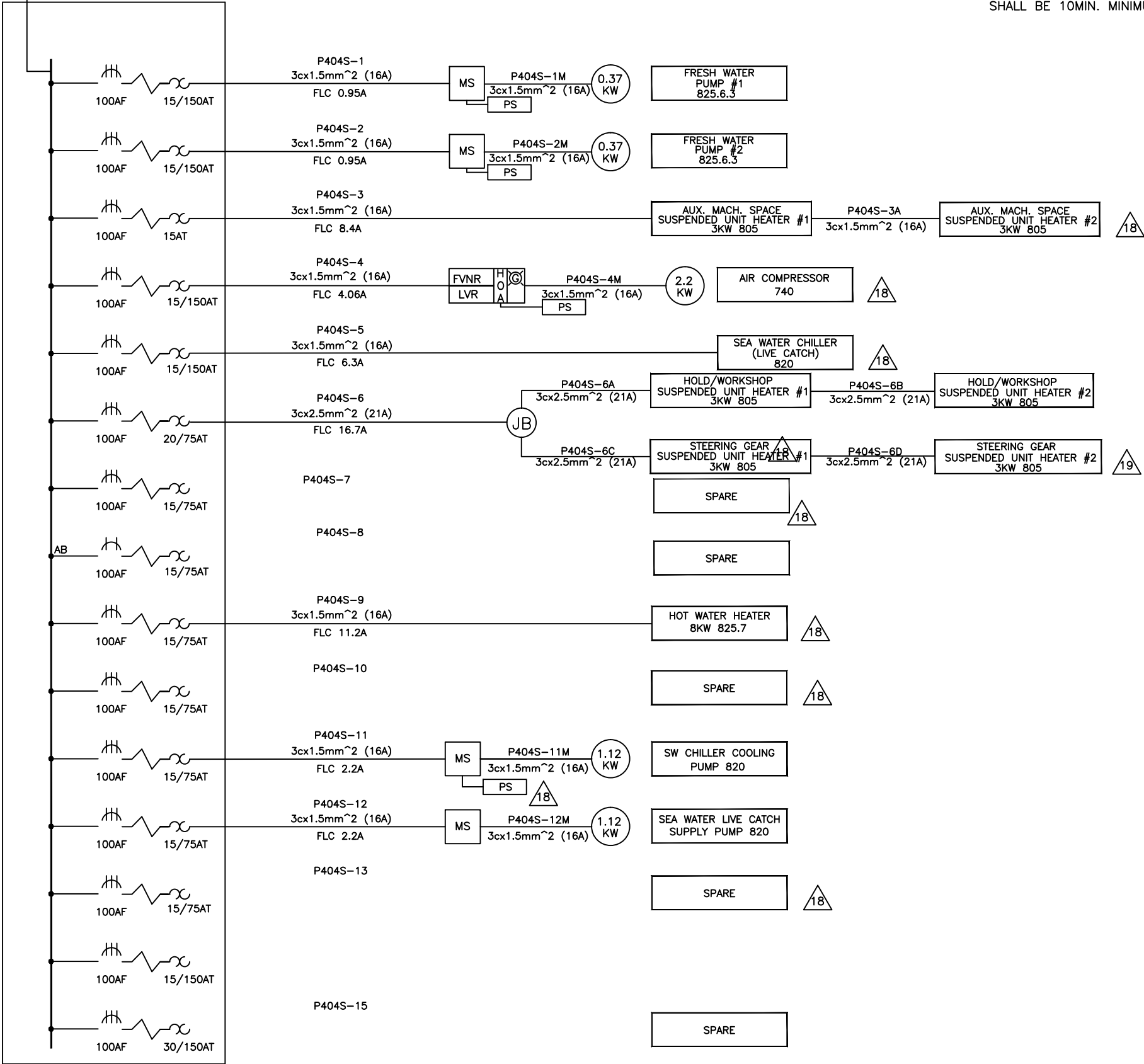
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REV :
DATE :
31/08/2012
SHEET :
6 OF 19

CCT# P404S
460V MAIN SWITCHBOARD STBD
SEE SHEET 5

P404S 460V HOLD WORKSHOP & AUXILIARY SPACE PANEL
460V, 3PH, 3W, 100A, 10kAIC, 15 POLES
SEE NOTE 2 SHEET 6

NOTE:

1. UPS IS CONTINUOUS ONLINE DUAL CONVERSION WITH AUTOMATIC BYPASS. OUTPUT IS 120/240V UNGROUNDED COMPLETE WITH INTERNAL FILTERING. BATTERY RESERVE SHALL BE 10MIN. MINIMUM AT FULL LOAD.



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Canadian Coast Guard

NAVIRE 22M VESSEL
COQUE # / HULL #
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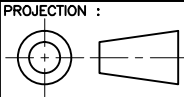
PROJECT TITLE :
Navire semi-hauturier de recherche halieutique
Near Shore Fisheries Research Vessels

PROJECT # :
MRO9-1113
DRAWN BY :
MM

DRAWING FILE :
ISV22-60000MM21.DWG
DRAWING # :
009-60000

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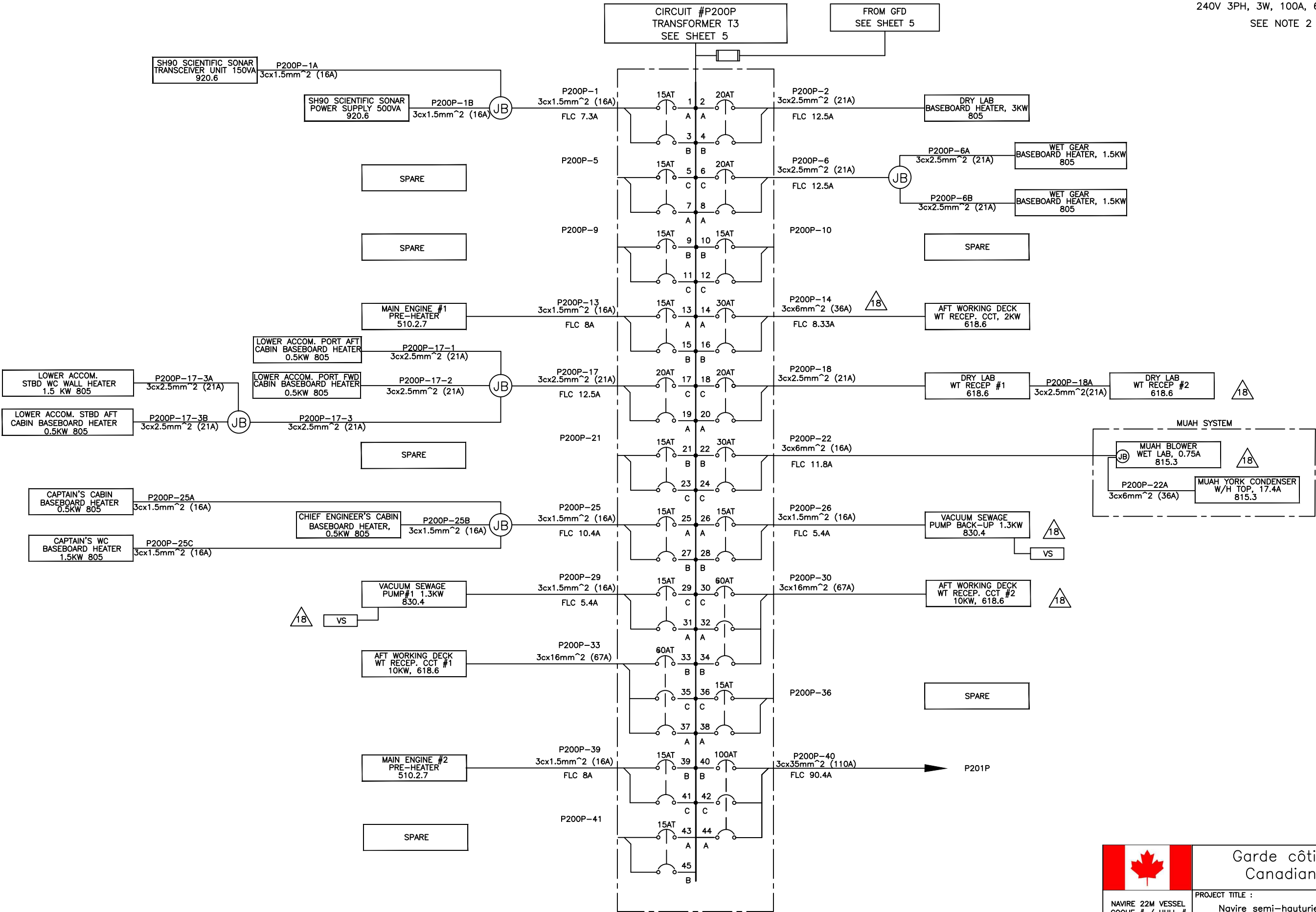
COMPANY :
MÉRIDIEN MARITIME
RÉPARATION


TITLE :
ONE LINE DIAGRAM
22M

NOTE: LE CABLE 3X1.5MM A PU ETRE REMPLACÉ PAR DU 3X2.5MM

P200P MAIN POWER DISTRIBUTION PANEL
240V 3PH, 3W, 100A, 6kAIC, 45 POLES
SEE NOTE 2 SHEET 6

18



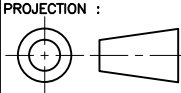
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PROJECT TITLE : Navire semi-hauturier de recherche halieutique Near Shore Fisheries Research Vessels		PROJECT # : MRO9-1113	
DRAWING FILE : ISV22-60000MM21.DWG		DATE : 31/08/2012	
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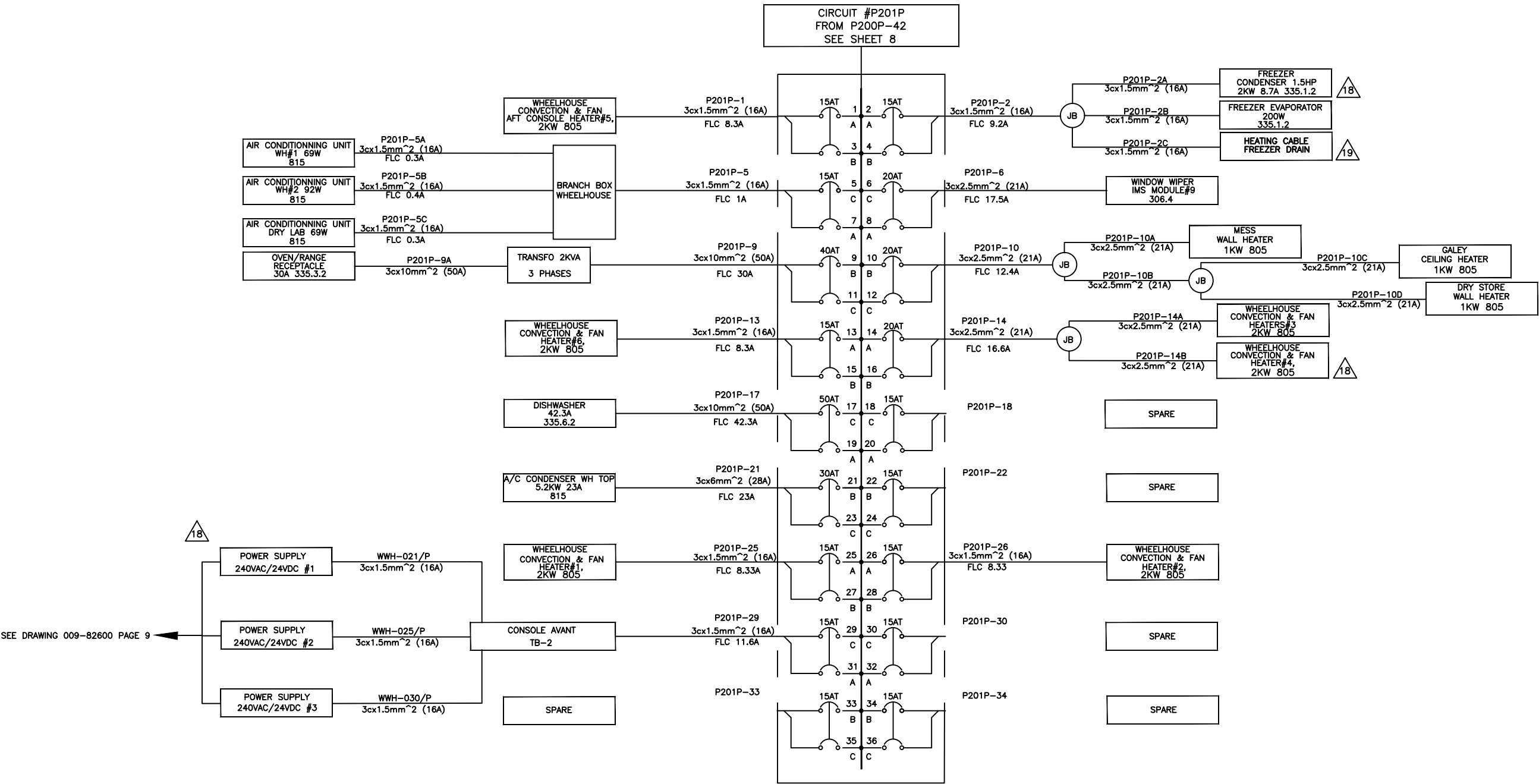


PROJECTION :

21

NOTE: LE CABLE 3X1.5MM A PU ETRE REMPLACÉ PAR DU 3X2.5MM

P201P SUB POWER DISTRIBUTION PANEL
240V 3PH, 3W, 100A, 6kAIC. 36 POLES
SEE NOTE 2 SHEET 6



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Canadian Coast Guard

NAVIRE 22M VESSEL
COQUE # / HULL #
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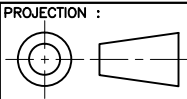
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Near Shore Fisheries Research Vessels

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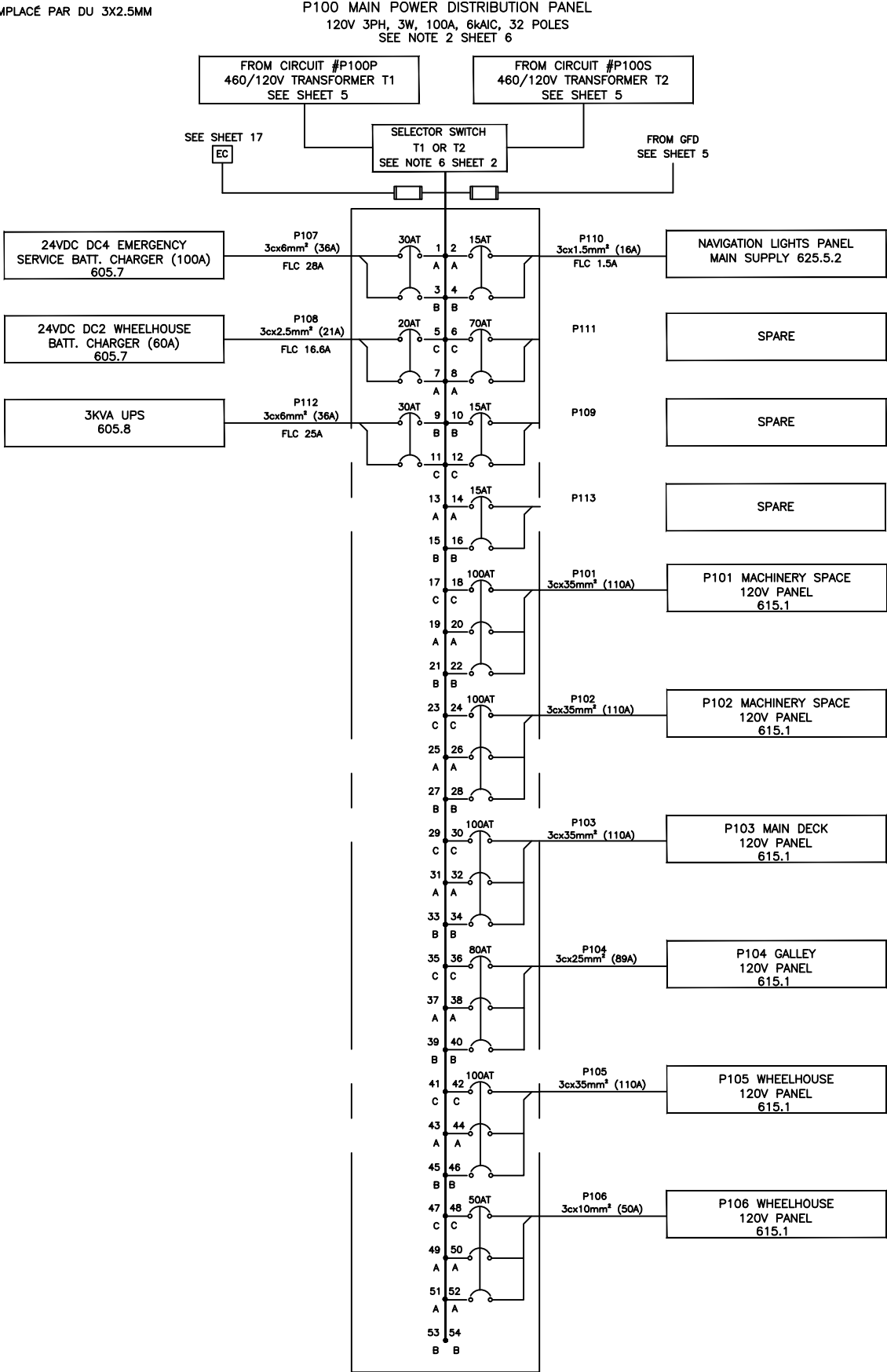


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TITLE :
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22M



NOTE: LE CABLE 3X1.5MM A PU ETRE REMPLACÉ PAR DU 3X2.5MM



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NAVIRE 22M VESSEL
COQUE # / HULL #
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PROJECT TITLE :
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Near Shore Fisheries Research Vessels

PROJECT # :
MRO9-1113

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DRAWING # :
009-60000

REV :
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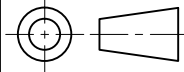
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RÉPARATION

TITLE :
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22M

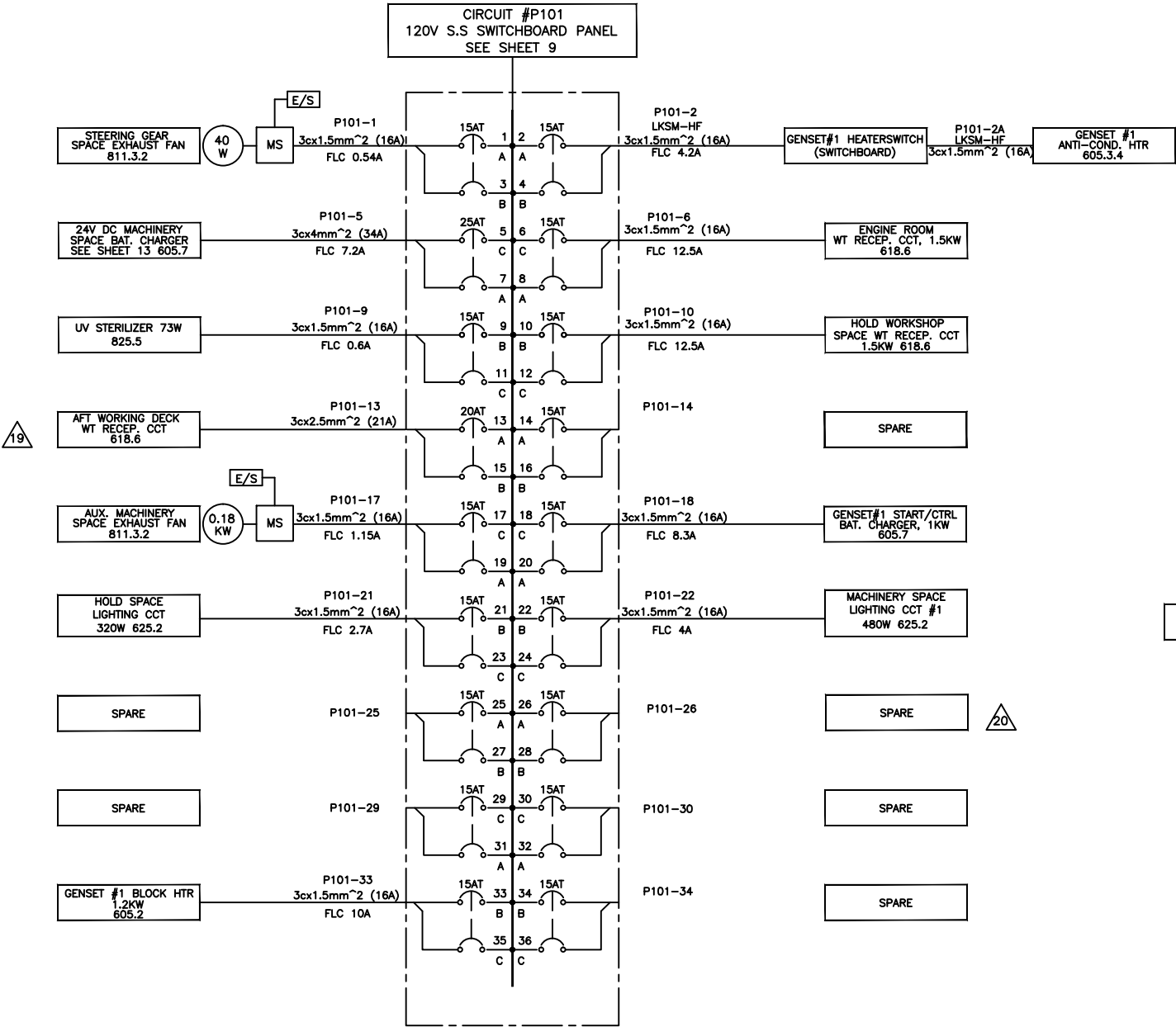
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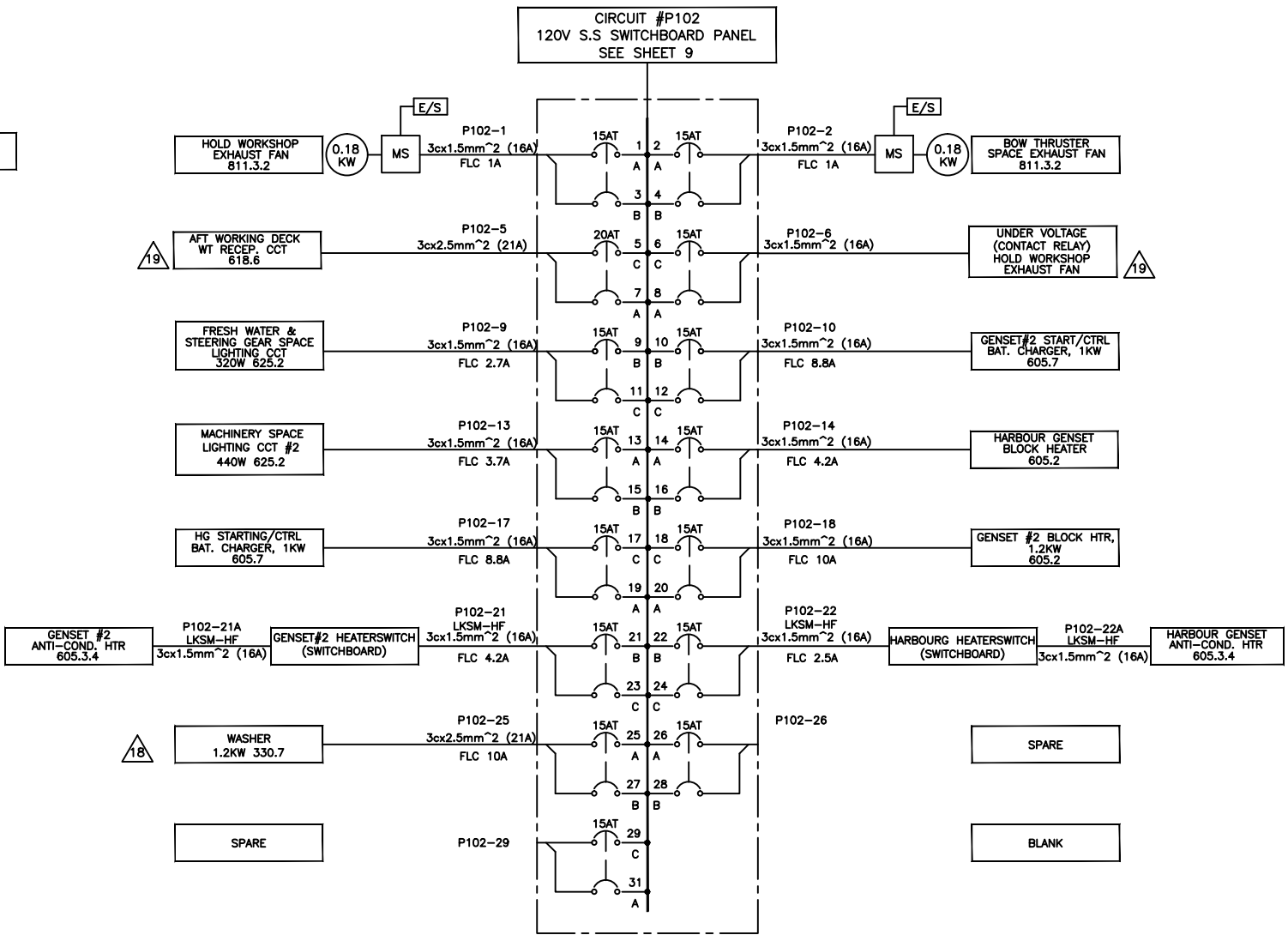


NOTE: LE CABLE 3X1.5MM A PU ETRE REMPLACÉ PAR DU 3X2.5MM

P101 MACHINERY SPACE PANEL #1
120V 3PH, 3W, 100A, 6kAIC, 36 POLE
SEE NOTE 2 SHEET 6



P102 MACHINERY SPACE PANEL #2
120V 3PH, 3W, 100A, 6kAIC, 30 POLE
SEE NOTE 2 SHEET 6



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MRO9-1113

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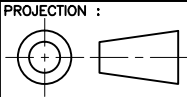
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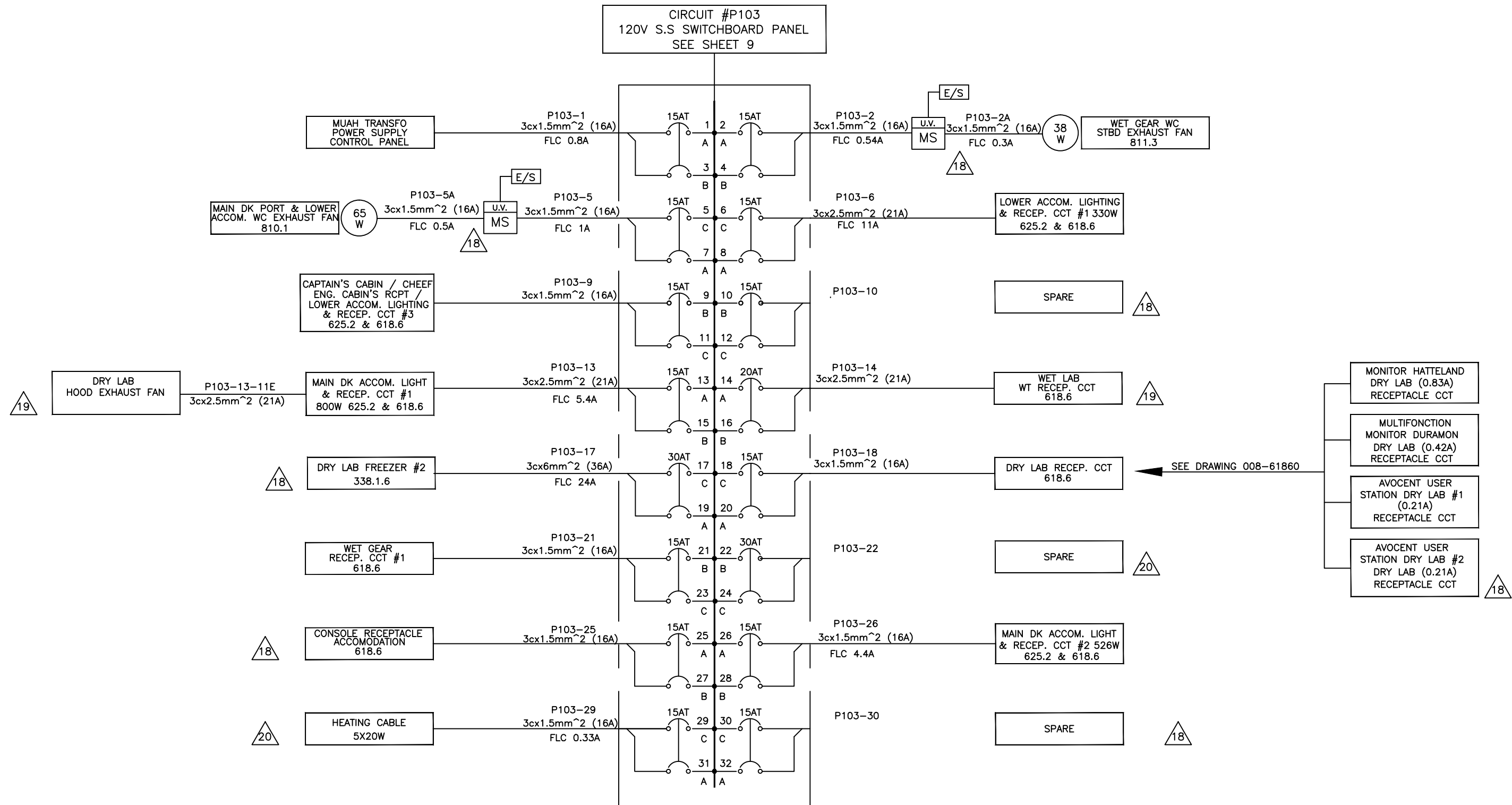


PROJECTION :

COMPANY :
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RÉPARATION

TITLE :
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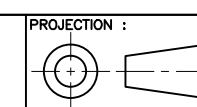
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COQUE # / HULL #
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DRAWN BY :
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DRAWING # :
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DATE :
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13 OF 19



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COMPANY :
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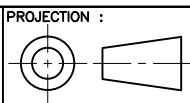
CIRCUIT #P104
120V S.S SWITCHBOARD PANEL
SEE SHEET 9



PROJECT TITLE :	Navire semi-hauturier de recherche halieutique Near Shore Fisheries Research Vessels
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009-60000	21	14 0

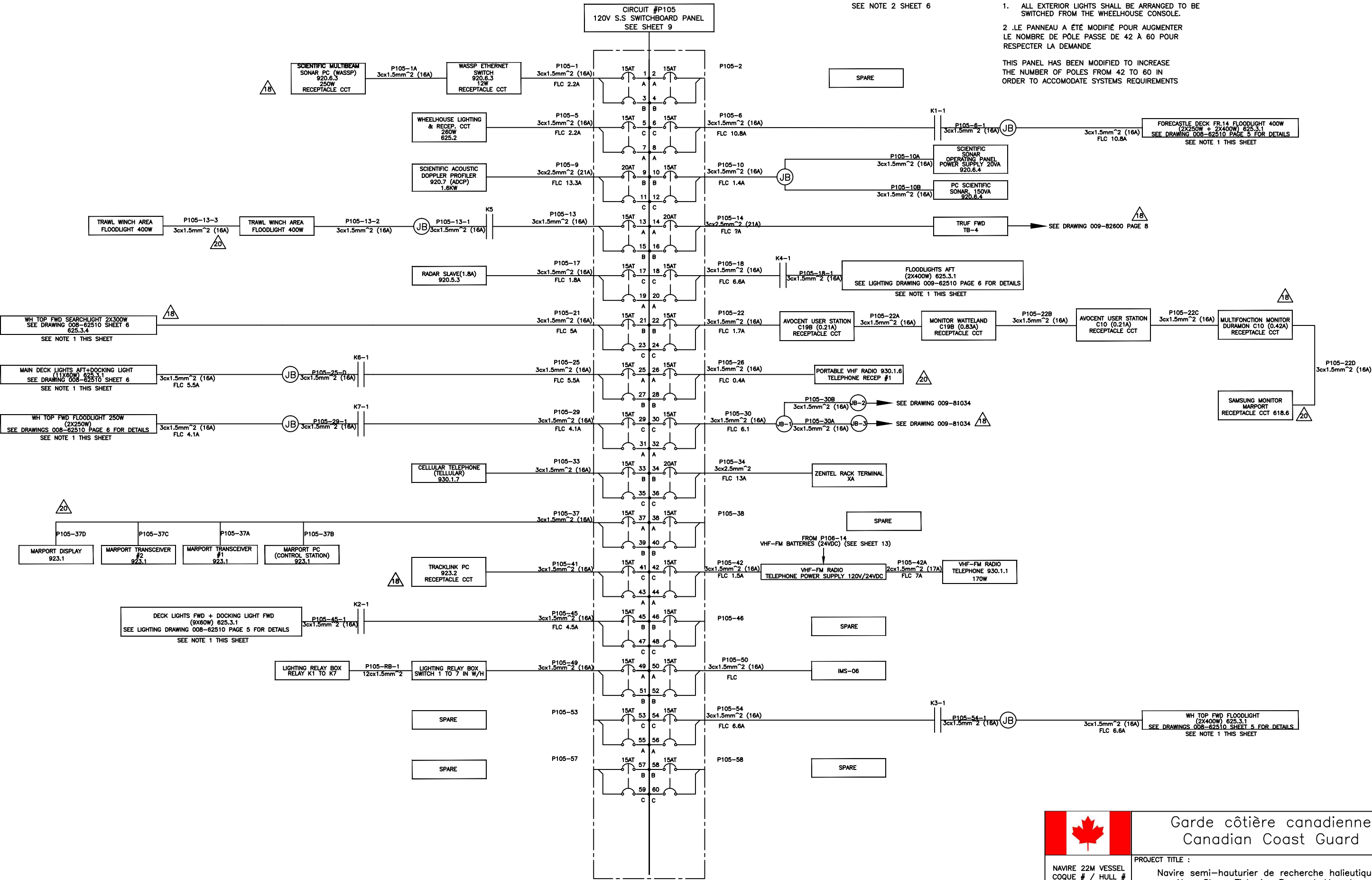


NOTE: LE CABLE 3X1.5MM A PU ETRE REMPLACÉ PAR DU 3X2.5MM

P105 WHEELHOUSE PANEL
120V 3PH, 3W, 100A, 6KAIC, 60 POLE
SEE NOTE 2 SHEET 6

NOTE:

1. ALL EXTERIOR LIGHTS SHALL BE ARRANGED TO BE SWITCHED FROM THE WHEELHOUSE CONSOLE.
- 2 .LE PANNEAU A ÉTÉ MODIFIÉ POUR AUGMENTER LE NOMBRE DE PÔLE PASSE DE 42 À 60 POUR RESPECTER LA DEMANDE
- THIS PANEL HAS BEEN MODIFIED TO INCREASE THE NUMBER OF POLES FROM 42 TO 60 IN ORDER TO ACCOMMODATE SYSTEMS REQUIREMENTS



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COQUE # / HULL #
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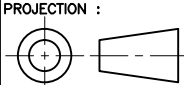
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22M

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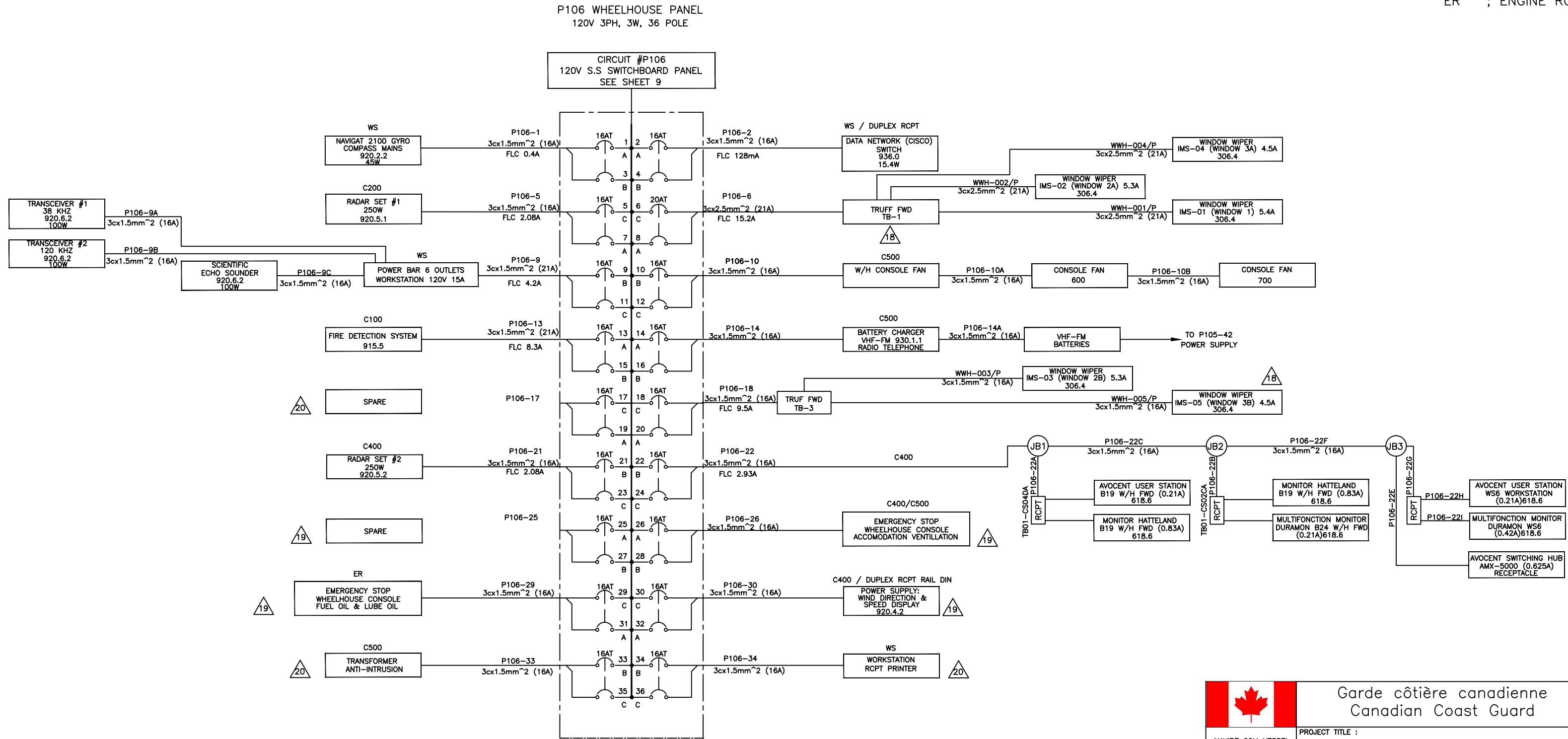


CABLE 3X1.5MM A PU ETRE REMPLACÉ PAR DU 3X2.5MM

NOTE:

- CABLE SIZES ARE APPROXIMATE. ON CONFIRMATION OF CIRCUIT LOAD INFORMATION AND CABLE LENGTH, CABLE SIZE SHALL BE ADJUSTED TO ENSURE VOLT DROP FROM SOURCE TO LOAD DOES NOT EXCEED 10% OF THE SOURCE VOLTAGE.

C100 ; CONSOLE 1
C200 ; CONSOLE 2
C300 ; CONSOLE 3
C400 ; CONSOLE 4
C500 ; CONSOLE 5
C600 ; CONSOLE 6
C700 ; CONSOLE 7
WS ; WORK STAT
ER ; ENGINE ROOM



COMPANY :

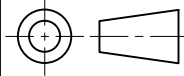
MÉRIDIEN MARITIME
RÉPARATION

TITLE :

ONE LINE DIAGRAM
22M

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PROJECTION :



PROJECT # :

MRO9-1113

DRAWN BY :

MM

DRAWING FILE :

ISV22-60000MM21.DWG

DRAWING # :

009-60000

REV :

21

PROJECT TITLE :

Navire semi-hauturier de recherche halieutique

Near Shore Fisheries Research Vessels

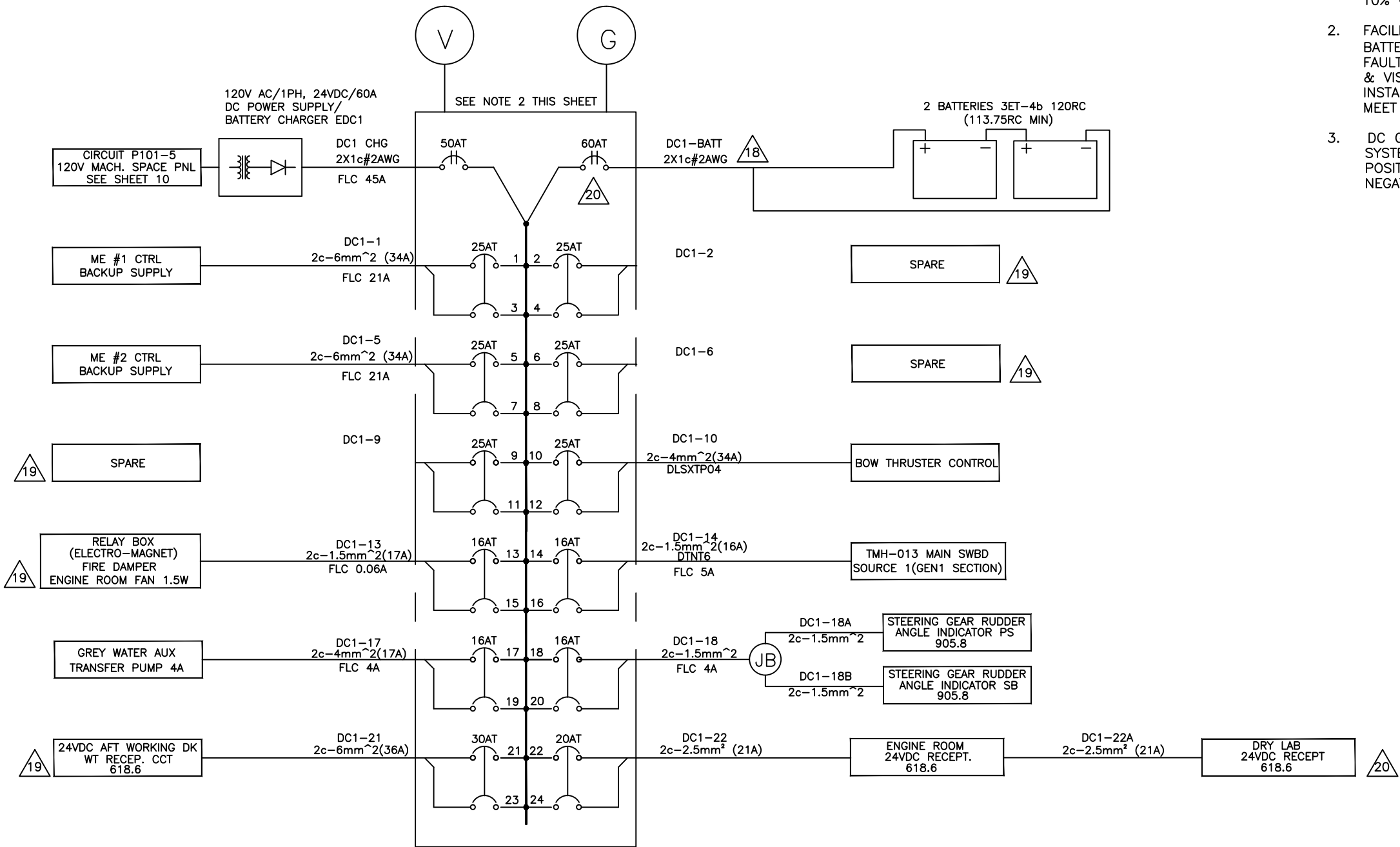
DATE :

31/08/2012

SHEET :

16 OF 19

DC1 24V DC MACHINERY SPACE PANEL
24 POLE



NOTE:

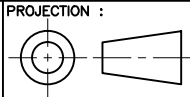
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- FACILITIES SHALL BE PROVIDED TO MONITOR THE BATTERY/BATTERY CHARGER UNITS FOR GROUND FAULT AND POWER SUPPLY FAILURE, AND AUDIBLE & VISUAL ALARMS SHALL BE PROVIDED AND INSTALLED IN A NORMALLY ATTENDED LOCATION TO MEET BV REQUIREMENTS.
- DC GROUND FAULT DETECTION SYSTEM: SYSTEM CURRENTLY DETECT GROUND ON THE POSITIVE LEAD ONLY. NO DETECTION OF THE NEGATIVE IS AVAILABLE.



COMPANY :
MÉRIDIEN MARITIME
RÉPARATION

TITLE :
ONE LINE DIAGRAM
22M

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PROJECT # :		DRAWING FILE :		DATE :	
MRO9-1113		ISV22-60000MM21.DWG		31/08/2012	
DRAWN BY :		DRAWING # :		SHEET :	
MM		009-60000		17 OF 19	


1. CABLE SIZES ARE APPROXIMATE. ON CONFIRMATION OF CIRCUIT LOAD INFORMATION AND CABLE LENGTH, CABLE SIZE SHALL BE ADJUSTED TO ENSURE VOLT DROP FROM SOURCE TO LOAD DOES NOT EXCEED 10% OF THE SOURCE VOLTAGE.
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3. DC GROUND FAULT DETECTION SYSTEM: SYSTEM CURRENTLY DETECT GROUND ON THE POSITIVE LEAD ONLY. NO DETECTION OF THE NEGATIVE IS AVAILABLE.



NAVIRE 22M VESSEL
COQUE # / HULL #
010

PROJECT TITLE :	Navire semi-hauturier de recherche halieutique Near Shore Fisheries Research Vessels
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PROJECT # :	MR09-1113
DRAWN BY :	MM

DRAWING FILE :		ISV22-60000MM21.DWG
DRAWING # :	009-60000	REV : 

DATE :	31/08/2012
SHEET :	18 OF 19

COMPANY : **MÉRIDIEN MARITIME**
RÉPARATION

TITLE : ONE LINE DIAGRAM
22M

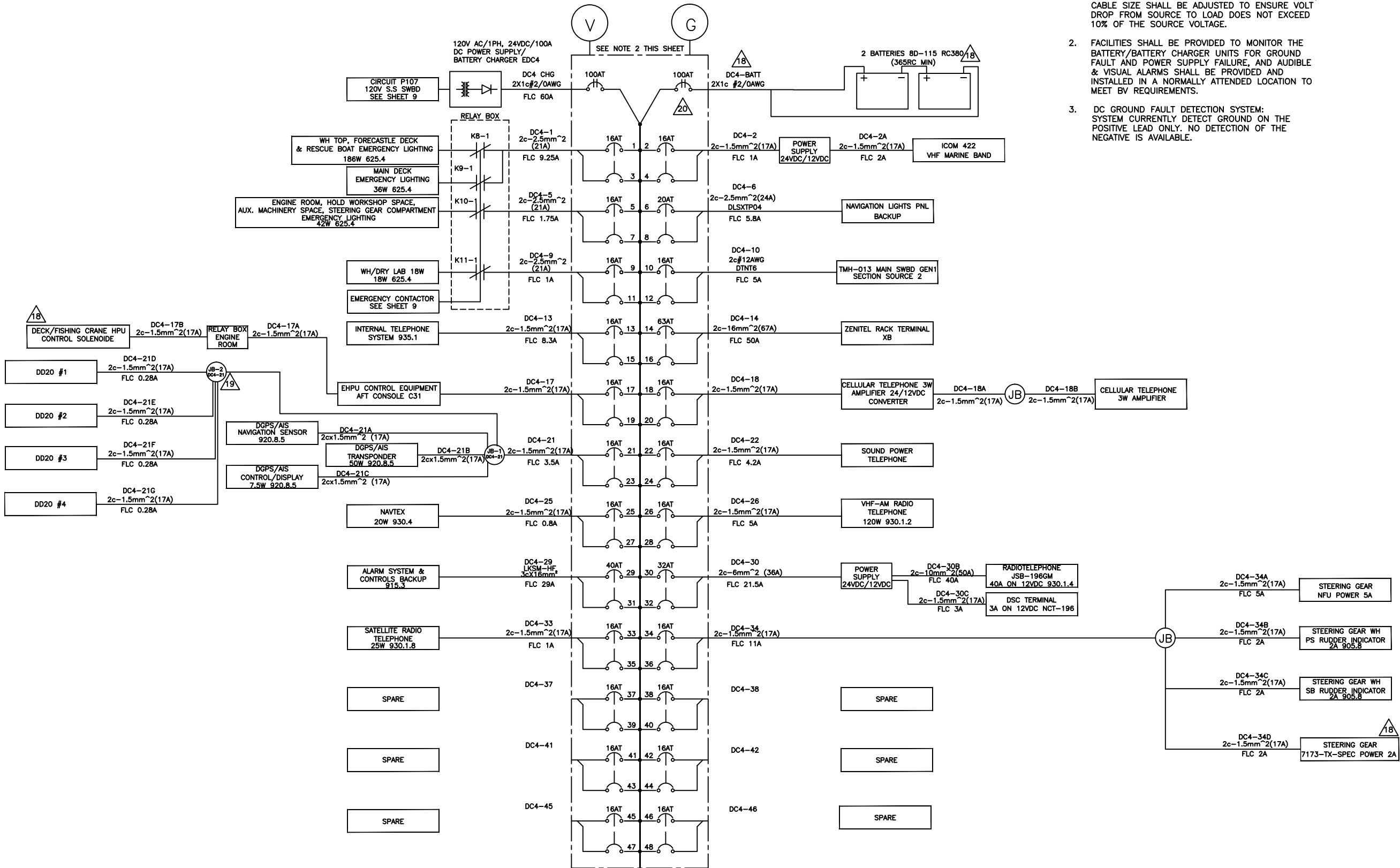
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PROJECTION :

The symbol consists of a circle on the left and a truncated cone on the right. A horizontal center line passes through the center of the circle and the axis of the cone. A vertical center line passes through the center of the circle. The cone is shown in profile, with its circular end face on the left and its truncated top and bottom edges on the right.


DC4 24V DC EMERGENCY SERVICES PANEL

48 POLE



NOTE:

1. CABLE SIZES ARE APPROXIMATE. ON CONFIRMATION OF CIRCUIT LOAD INFORMATION AND CABLE LENGTH, CABLE SIZE SHALL BE ADJUSTED TO ENSURE VOLT DROP FROM SOURCE TO LOAD DOES NOT EXCEED 10% OF THE SOURCE VOLTAGE.
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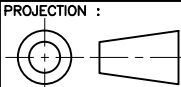
		Garde côtière canadienne Canadian Coast Guard	
NAVIRE 22M VESSEL COQUE # / HULL # 010		PROJECT TITLE : Navire semi-hauturier de recherche halieutique Near Shore Fisheries Research Vessels	
PROJECT # : MRO9-1113	DRAWING FILE : ISV22-60000MM21.DWG	DATE : 31/08/2012	
DRAWN BY : MM	DRAWING # : 009-60000	REV : 21	SHEET : 19 OF 19



COMPANY :
MÉRIDIEN MARITIME
RÉPARATION

TITLE :
ONE LINE DIAGRAM
22M

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PROJECTION :