TM 55-1905-223-24-18-1

TECHNICAL MANUAL

UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

LANDING CRAFT, UTILITY (LCU)

NSN 1905-01-154-1191

BASIC CRAFT

(PART I)

This, copy is a reprint which includes current pages from changes 1 - 3.

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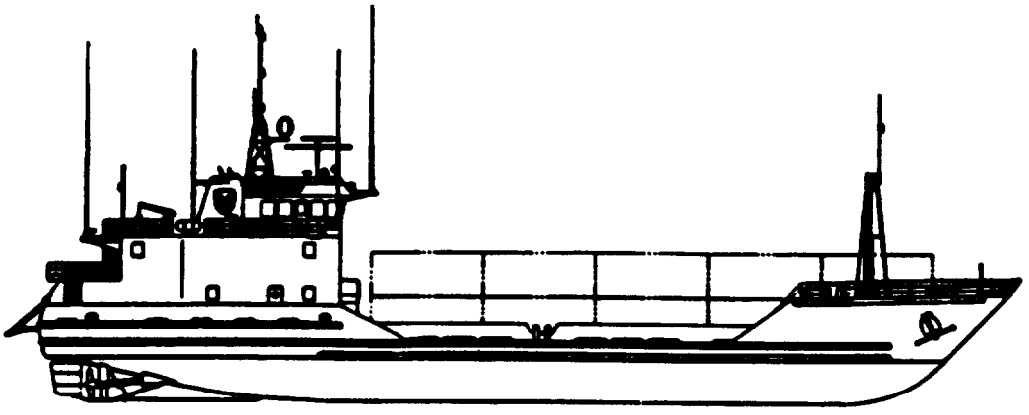

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UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS FOR THE LANDING CRAFT, UTILITY (LCU) BASIC CRAFT (PART 1) NSN: 1905-01-154-1191

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CHAPTER1

INTRODUCTION

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Section I. GENERAL INFORMATION

1-1. Scope. The scope of this manual is as follows:

a. Type of Manual. Unit, intermediate direct support, and intermediate general support maintenance manual.

b. Model Number and Equipment Name. Refer to the individual subsystems of this TM.

c. Purpose of Equipment. Refer to the individual subsystems of this TM and Operator's Manual TM 55-1905-223-10.

1-2. Maintenance Forms, Records, and Reports. Department of the Army forms and procedures used for equipment maintenance are prescribed by DA Pam 738-750, the Army Maintenance Management System.

1-3. Destruction of Army Materiel. Refer to TM 750-244-3 for instructions covering the destruction of Army materiel to prevent enemy use.

1-4. Reporting Equipment Improvement Recommendations. If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, U.S. Army Troop Support Command; ATTN: AMSTR-QX; 4300 Goodfellow Blvd.; St. Louis, Missouri 63120-1798. We'll send you a reply.

1-5. Preparation for Storage or Shipment. Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the Preventive Maintenance Checks and Services (PMCS) charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Preparation of equipment for shipment or short term storage is covered in paragraph 2-9.

1-6. Characteristics, Capabilities, and Features. A very broad view of the Basic Craft Manual (TM 55-1905-223-24-18-1/2) components is covered in the Operator's Manual (TM 55-1905-223-10).

1-7. Location and Description of Major Components. Refer to Section II. Equipment Description of Operator's Manual (TM 55-1905-223-10).

Section II. EQUIPMENT DATA

1-8. Equipment Data. Refer to the equipment data given in the Operator's Manual (TM 55-1905-223-10).

1-9. Safety, Care, and Handling. Safety precautions must be observed at all times while performing maintenance. General **WARNINGS** and first-aid data appear in the front of this manual. Review all safety information before starting any task. Carefully read through an entire maintenance procedure before performing any maintenance function. Make sure the task can be done safely. All **WARNINGS, CAUTIONS,** and **NOTES** are of great importance to your safety and the safety of the equipment.

Section III. PRINCIPLES OF OPERATION

1-10. General. The following paragraphs provide principles of operation of the LCU systems.

1-11. Power Generation System. The power generation system provides the LCU with primary (240 Vac, 3-phase, 60Hz, 250kW) and emergency (240 Vac, 3-phase, 60Hz, 40kW) electrical power (FIGURE 1-1). Primary power is generated by one of two ship's service diesel generator (SSDG) sets, which supply the main switchboard and the emergency switchboard through a bus tie from the main switchboard. Emergency power is generated by an emergency diesel generator set, which supplies the emergency switchboard for continued operation of vital systems and equipment during loss of primary power. In port, the LCU is capable of receiving shore power (480/240 Vac) through a shore power cable terminating at a two-connection shore power box. If available shore power is 480 Vac, the power is selected at the main switchboard through a circuit breaker and stepped down to 240 Vac by three shore power transformers, prior to main switchboard entry. Shore power of 240 Vac is selected at the main switchboard by circuit breaker, and bypasses the 480 Vac transformers. Automatic bus transfer equipment, located in the emergency switchboard, isolates the emergency switchboard from the main switchboard upon loss of primary power and allows emergency power to be supplied through the emergency switchboard.

a. Ship Service Diesel Generator Engine. Two diesel generator set engines power individual ship service diesel generators, which provide primary electrical power throughout the LCU. The port ship service diesel generator engine (No. 2) is air started; the starboard ship service diesel generator engine (No. 1) is electrically started. Engine control and monitoring are provided from the engine room console and at the individual engine control panel.

b. Shin's Service Generator. Two 250 kW brushless exciter generators provide 240 Vac, three-phase, 60 Hz primary ship's service power. Each generator is capable of providing 110 percent of the necessary at sea load for the propulsion and safety of the ship under normal conditions. The generators may be operated in parallel; however, normal operation has one generator on line and the other in reserve.

C. Main Switchboard. The main switchboard (FIGURE 1-2), located in the engine room operating station, provides generator selection, shore power selection, and power distribution for ship's service 240 Vac and 120 Vac power. Distribution of 120 Vac is accomplished by ship's service 120 Vac transformers located in the engine room operating station. The emergency switchboard bus tie provides 240 Vac to the emergency switchboard. Power selection is provided by closing circuit breakers on the switchboard. Power monitoring is provided by ammeters, voltmeters, frequency meters, and synchronization meters. Controls are provided for manual and automatic generator voltage regulation and generator engine speed regulation, The switchboard bus tie also serves as an emergency 240 Vac power feedback source for the main switchboard from the emergency switchboard, to power selected equipment systems during emergency power conditions. An interlock system is incorporated into the switchboard to prevent shore power from being applied to the switchboard while generator power is applied. The interlock system also prevents the emergency switchboard emergency generator circuit breaker from being closed.

d. Emergency Switchboard. The emergency switchboard (FIGURE 1-3), located in the emergency generator room, normally receives 240 Vac primary power from the main

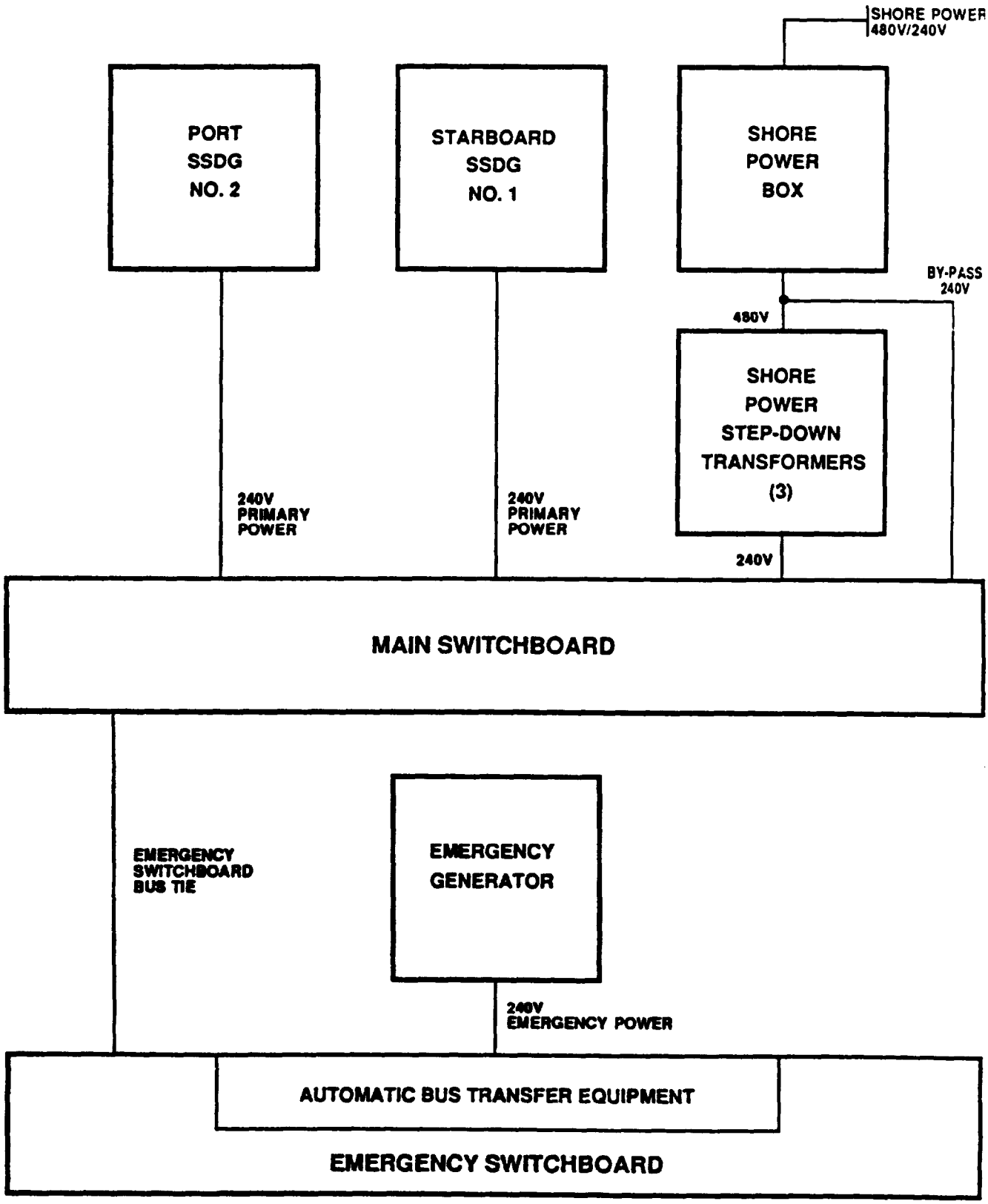

FIGURE 1-1. Power Generation System.

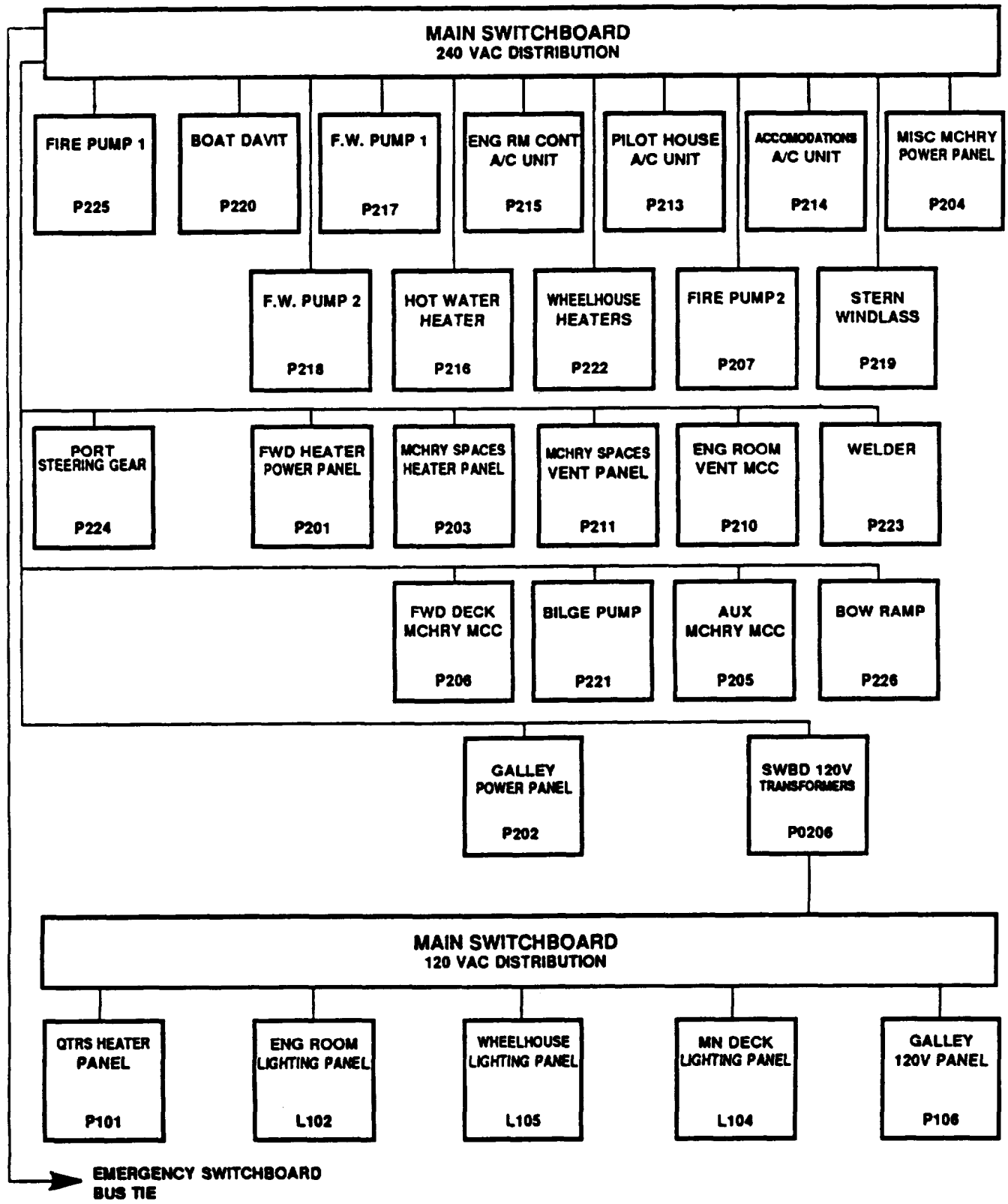

FIGURE 1-2. Main Switchboard.

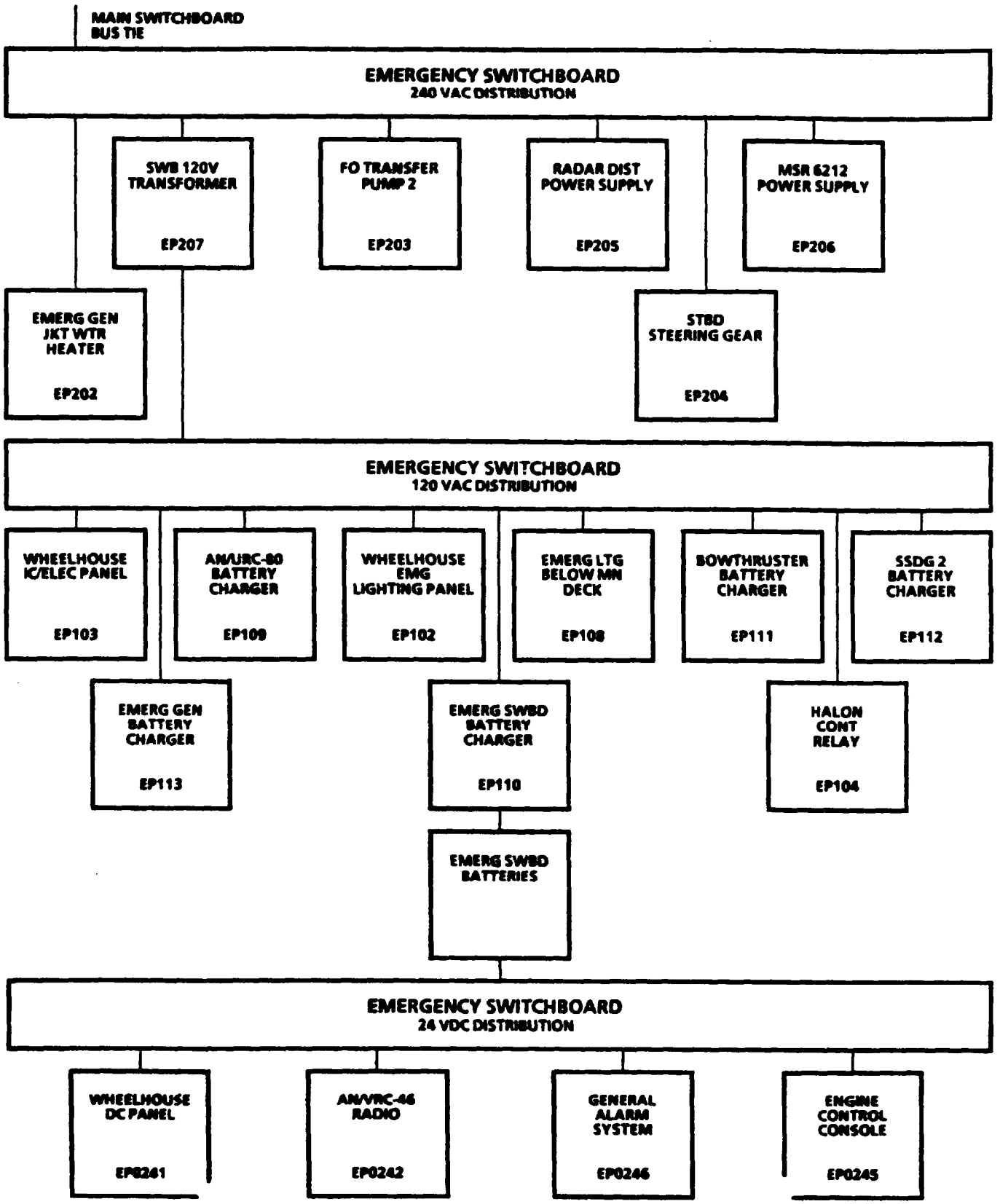

FIGURE 1-3. Emergency Switchboard.

switchboard through the bus tie. Upon loss of ship's service power from the main switchboard, automatic bus transfer equipment within the emergency switchboard isolates the emergency switchboard and provides for automatic or manual starting of the emergency generator. Power monitoring of the emergency generator is provided by a voltmeter, ammeter, wattmeter, and frequency meter. A voltage adjustment control for the emergency generator output is also provided. A main switchboard bus tie circuit breaker and bus tie bypass switch permit distribution of emergency power (240 Vac) to the main switchboard. The emergency generator circuit breaker is prevented from being closed by an interlock system when primary power is being provided through the bus tie. Power distribution is accomplished through circuit breakers on the switchboard 240 Vac, 120 Vac, and 24 Vdc distribution panels. A step-down transformer provides 120 Vac back to the switchboard, and a 24 Vdc battery charger and switchboard batteries provide 24 Vdc back to the switchboard for distribution.

e. Shore Power Box. The shore power box is located on the 01 level, aft exterior bulkhead. The two-connection shore power box provides a cable connection for shore power and another cable connection for providing shore power to another vessel in tandem.

1-12. Control and Monitoring System. The control and monitoring system provides for the centralization of control and monitoring functions for the main propulsion power train, selected pumps, ship's service diesel generators, and vital alarms. Pilothouse and engine room propulsion control is possible without intervention of engine room personnel. Primary control is from the pilothouse console with one soldier at the engine room console. The system permits constant automatic monitoring of vital machinery operating conditions and initiation of many functions from the engine room console. The control and monitoring system consists of the following: engine room console, pilothouse console, machinery plant monitoring and alarm system, engine order telegraph, steering control panel, dual station throttle control system, bowthruster and auxiliary fire pump control, fire detection, and bow ramp control.

a. Engine Room Console (ERC). The ERC provides a centralized engine room location for: controlling propulsion shafts direction and speed; monitoring machinery alarm conditions; acknowledging engine orders; alerting engineering personnel of assistance needed and acknowledging the dead man alarm notification from the bridge. These functions are provided to the ERC via interfaces with the machinery plant monitoring system, engine order telegraph, and dual station throttle control system.

b. Pilothouse Console (PHC). The PHC provides control and monitoring of the main propulsion power train speed and direction during usual ship operating and maneuvering conditions without intervention of engine room personnel. The PHC also provides for: machinery plant monitoring; autopilot operation; steering system selection and monitoring; bowthruster/auxiliary fire pump engine control; bowthruster control; communicating desired propulsion shaft direction and speed to the ERC; operation of blinker lights; operation of bow ramp; operation of ship's intercommunications system; and activation of ship's general alarm system. These functions are provided to the PHC via interface with the machinery plant monitoring system; autopilot; steering control panel, helm (wheel) and rudder angle indicator; dual station throttle control system, port and starboard main propulsion engine shaft tachometers; bowthruster engine shaft tachometer; bowthruster control panel; engine order telegraph; blinker light key; ship's intercommunications panel; and the general alarm contactor.