TROUBLESHOOTING SCENARIOS	
F0RM NO	***GR002. A*** *(SCENARIO 19A)*
SCENARIO NAME	What if a wide blackout occurs on a ship in the middle of the ocean? Start emergency generator with different ways (Battery start method)
SYSTEM NAME	Emergency generator operation
MAX TIME	15 min
SYSTEM DESCRIPTION	Emergency generator (EG) on ship provides power (220 and 440 V) in case the main and auxilliary generators of the ship fail and creates a "dead or blackout condition". Emergency generator (EG) is constructed to supply electric power to some of the most important instruments, devices, and machinery on a ship such as essential sensors and alarm systems, crucial instruments, and other important machinery such as Navigation systems, vessel's alarm system, emergency pumps, emergency lighting, and steering motor, GMDSS equipment, emergency air compressors, fire detection systems, communication equipment. In other words, an emergency generator (EG) powers essential machinery needed for the vessel to maneuver, communicate, start critical pumps, and send distress signals while the crew repairs the main or auxiliary engines. An emergency generator (EG) is connected to its own emergency switchboard (ESB) connected in parallel with the main switchboard (MSB). This way, they can supply the necessary power for critical functions during a significant electrical failure. Starting method of emergency generator EG must be achieved at least with two ways, manual and automatic. The emergency generator (EG) should come on load automatically within 45 seconds of the power failure. In case that does not kick in automatically, we can start the generator manually. The manual function involves battery start and hydraulic or pneumatic start. Emergency generator is located at a safe place away from the main power source. Ideally above the uppermost continuous deck. Both the emergency generator (EG) and its emergency switchboard (ESB) is located in the same compartment.
DESCRIBE THE PROBLEM	The emergency generator fails to start automatically (as a result essential machinery are not powered supply)
PREPARATION	•You will hear heavy sound at Engine room ER, at Engine Control Room ECR and at Emergency Generator Control Panel EGCP • Signal light column for machinery alarm is illuminated •Alarm list, ALR_EG_001
SCENARIO ALGORITHM	1. BEGIN 2. Heavy Alarm sound and visual indicator lights for machinery alarm is illuminated at Emergency Generator Control Panel EGCP, at Engine Control Room ECR and at Engine Room ER 3. Messages on ECR computer panel & at EGCP will appear: (ALR_EG_001) and "EG Automatic Start Failure" with red letters 4. The voltometer at ECR, at EGCP & at ESB will show "0 Volts" 5. Student will have to press ACKNOWLEDGE BUTTON in ECR computer panel or at EGCP 6. The alarm horns will SILENT and visual indicator lights will go OFF 7. The letters on message on ECR computer panel & at EGCP): "EG Automatic Start Failure" will change color to yellow letters. 8. Student will physically have to go to EGR, in front of EGCP and start the emergency

	generator using battery start method by changing over the control switch at EGCP from Auto to Manual 9. Student must press the start button at EGCP and the emergensy generator will start working 10. When voltage goes to 440V and frequency to 60Hz the ACB at the ESB is going to close automatically and the engine will come on load. That means that the essencial machinery-vital consumers are now supplied with voltage. 11. Messages on ECR computer panel & at EGCP , "EG Automatic Start Failure", will be DELETED 12. For stopping the emergency generator, the student must press the STOP button at EGCP. The ACB at the ESB is going to open automatically and the engine will come off load. The essencial machinery-vital consumers aren't now supplied with voltage. 13. Student must change back the control from Manual to Auto at the EGCP. 14. FINISHED SCENARIO
QUESTIONS	- How will you start the emergency generator if a wide blackout occurs? - What's the meening of the message "EG Automatic Start Failure"? - How will the engine come on load after starting the emergency generator using battery start method? - What is the operating voltage and frequency range of the essencial machinery-vital consumers? - Why you must change back the control from Manual to Auto at the EGCP, after starting the emergency generator using a manual start method?
LEARNING OUTCOMES	Student's must be able to: - Recognize alarm sound and visual indicator lights at Emergency Generator Control Panel EGCP, at Engine Control Room ECR and at Engine Room ER - Recognize the messages on ECR computer panel & at EGCP - Start the emergency generator using battery start method - Check-read the analog or digital Frequency Meter & Voltmeter indicators - Understand the operation of mode selection at EGCP from Auto to Manual - Understand the importance of suppling the essencial machinery-vital consumers with voltage