

TROUBLESHOOTING SCENARIOS	
FORM NO	<i>BUL001</i>
SCENARIO NAME	COMPRESSOR N1 WEAR OF THE RINGS AND VALVES – TEAR AND WEAR OF THE COMPRESSOR 1 RINGS AND VALVES
SYSTEM NAME	COMPRESSED AIR SYSTEM - CA
Max Time	10 min
SYSTEM DESCRIPTION	<p>Purpose of CA system: The system is designed for production, storage and supply of compressed air, including air for the diesel start/control.</p> <p>The system includes the following components: The system of pipelines and reservoirs as a gas-dynamic object; Electrically driven two-stage air compressor 1 with water cooling and an air cooler - pumping air under a pressure of 30 bar to two main bottles; Electrically driven two-stage air compressor 2 with water cooling and an air cooler - pumping air under a pressure of 30 bar to two main bottles; Electrically driven emergency compressor for pumping air to the auxiliary compressed air bottle, designed basically for starting the DG's duration "reanimation" of a ship taken out of service; Main compressed air bottles 1 and 2. The bottled air is used for starting diesels, the main and auxiliary ones (without pressure reduction), also for the control system (via the reducing station that decreases pressure down to about 7 bar), and for service needs – through a reducing valve; The automation system that starts compressor 1, when the pressure in the main bottles drops to 22 bar, and stops the compressor at 30 bar (such system is not provided for compressor 2 from the procedure point of view); After the compressors, there is a oil/water separator blown down to the bilge well automatically, when the compressor is started, or manually during its operation. Besides, there are valves for blowing down the main bottles to remove the accumulated moisture here.</p>
Describe the problem	<p>When we have Alarm signal - Compressor N1 Wear of the Rings and Valves – tear and wear of the compressor 1 rings and valves the pressure in bars in Air Receiver 1 or 2 starts to drop (below 22 bars) and we have to turn on compressor 2 and the other receiver accordingly!</p> <p>Alarm signal (Audio or Visual)- Compressor N1 Wear of the Rings and Valves – tear and wear of the compressor 1 rings and valves.</p> <p>Main air reservoir 1&2 pressure low is activated following alarms and changes will be triggered.</p>
Preparation	<ul style="list-style-type: none"> • You will hear heavy sound in ER • Signal light column for machinery alarm is illuminated • Alarm list

SCENARIO ALGORITHM	<p>Scenario chronology:</p> <ol style="list-style-type: none"> 1. Heavy Alarm sound and Signal light column for machinery alarm is illuminated 2. Message on ECR computer panel will appear 3. The alarm of the starting air compressor is acknowledged by the operator on the AMS menu. Student will have to press ACKNOWLEDGE BUTTON in ECR computer panel. It means just a mute alarm no off all system 4. The alarm horn will and light on signal column will stop blinking but continuously ON 5. The letters on message on ECR computer panel: alarm messages will change color to yellow letters 6. The starting air compressors don't respond to the engine control console commands given by the operator 7. Student will physically have to go from ECR to ER in front of the local push button box together with the pressure switches of starting air compressor 1&2. 8. Student will try to start locally Starting air compressor No1 but it is not able to be started from local station, but starting air compressor No2 responds 9. After few minutes of operation of the compressor and rising the pressure above 22 bar Messages on ECR computer panel will DELETE 10. Student will stop the compressor after reach 30 bar 11. The student informs the bridge for the compressor No1 failure and that starting air compressor No2 is operated manually. 12. FINISHED SCENARIO <p>*Action (MANUAL mode):</p> <ul style="list-style-type: none"> o Stop Compressor N1; o Open the bottle 2 valves (the "RECEIVER 2" module) – FROM COMPRESSOR; o Make sure the cooling of components is ON in the SW system; o Start the compressor No:2 (the STOP/START buttons for COMPRESSOR 2 in the MANUAL mode), fill up both bottles up to 30 bar; o Set compressor control to the AUTO mode; o Open the bottle 1 or 2 valves (the "RECEIVER 1 or 2" module) – START AIR, CNTRL. AIR; o Check that there is no alarm signal in the system. o Monitor system pressure is in between 22-30 bar when compressor no:2 is on line.
QUESTIONS	<ol style="list-style-type: none"> 1. What is start air pressure? 2. What is correct procedure for repairing compressors? 3. What was exact alarm message?
LEARNING OUTCOME	<p>To maintain starting air pressure</p> <p>To execute repair procedure on air compressor</p>