

TROUBLESHOOTING SCENARIOS

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| FORM NO | GRE005. (<i>Scenario 18</i>) |
| SCENARIO NAME | Marine Auxiliary Boiler's Fuel Pump Tripping. |
| SYSTEM NAME | Marine boiler steam and water system. |
| Max Time | 4 min |
| SYSTEM DESCRIPTION | <p>Marine auxiliary boiler is only used in port and the exhaust boiler caters for all heating and steam needs while at sea. These boilers have boiler burners to supply the required heat when the supply of heat from the ME exhausts gases is not sufficient. Generally, if the burner routines are carried out religiously and the filters are cleaned, there is no major maintenance or routine that needs to be done.</p> <p>This happens within ports (when the ME is in a standby state) or during the start of the ME.</p> <p>The fuel of these burners can be HFO or MDO according to its type.</p> <p>The fuel is transferred to the burner via a fuel pump, but alternatively it is supplied with a backup pump in case of malfunction of the main pump. The normal operating pressure of these pumps varies between 7-10 bar.</p> |
| Describe the problem | During standby, the boiler steam pressure in the auxiliary boiler shut down after flame failure alarm came. After many futile attempts to restart the HFO burner, the burner was changed over to DFO and manually fired. The auto firing mode was non-operational and the DFO pressure low alarm was coming and fuel pump stopping. |
| ALARM TYPE As a result of the problem mentioned above, alarms to be triggered | <p>When the steam pressure drops below 0.66 MPa then:</p> <ul style="list-style-type: none">● Alarm lights up at AB steam press low.● The manometer station will flash.● Burner status shows blocked. |

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| <p>SCENARIO CHRONOLOGY</p> | <ol style="list-style-type: none"> 1. Low Alarm sound and Signal light column for machinery alarm is illuminated. 2. Message on ECR computer panel will appear: Auxillary boiler steam press low with red letters. 3. We will have to press ACKNOWLEDGE BUTTON in ECR computer panel (Does it means just a mute alarm) 4. The alarm horn will SILENT (not power off Just Silent but still there is the power). The letters on message on ESC MOP-A change color to yellow letters. 5. There are two fuel oil (FO) pumps, try starting the second pump to temporarily start the burner to restore the desired steam pressure in AB so that we can investigate the problem in the main pump. 6. The following checks were done that helped to restart the burner. 7. Generally the Fuel Oil pressure before the burner must be between 7 to 10 bars. In case the pressure is too high more fuel will be sent and the air fuel ratio disturbed. Less fuel pressure will give a lean mixture and flame will be unsteady and fail. 8. The fuel pump might trip on overload. Check the pump for mechanical damage and jamming. It should be free to turn by hand. 9. Check supply and return lines for correct functioning of valves. 10. If the fuel pumps are tripping in manual firing then there is pump problem or back pressure. 11. FINISHED SCENARIO |
| <p>QUESTIONS</p> | <p>What is the fuel oil pressure? What is the boiler steam pressure? What was exact alarm message? What did you achieved by changing fuel pump?</p> |
| <p>OUTCOMES</p> | <p>To detect and respond to damaged fuel pump. Can maintain AB fuel pressure. To ensure smooth operation of the boiler systems. To start second fuel pump.</p> |