**Vessel Name:………………………………**

In case of faults, ensure system is safe and reduce engine load as primary corrective action

Malfunction type:……………………………………………….

Date and time indicated:……………………………………. and vessel’s position: Lat ………………………. Long…………….

Date and time date rectified:……………………………and vessel’s position: Lat ………………………. Long…………….

If not rectified- date and time scrubber stopped/ switched to compliant fuel:……………………………

and vessel’s position: Lat ………………………. Long…………….

**Malfunction type = Exceedences of SO2 / CO2 Emission Ratio**

|  |  |  |  |
| --- | --- | --- | --- |
| **Possible Cause** | | **Inspection Route** | **Action –** if applicable/done -tick and enter time |
| Insufficient process water, seawater or cooling water | Choked sea water suction filter/strainer | Check filter(s)/strainer(s) | Change over and clean filter(s)  🞎……󠅬……………󠅬 |
| Pump / System valve shut | Check valve position | Re-set valve(s) |
| Poor wash, water, or cooling water pump performance | Verify pump performance - pressure and flow against manufacturers data | Change running pump to stand-by pump  🞎……󠅬……………󠅬 |
| Low wash- or cooling water flow rate | Verify pump performance - pressure and flow against manufacturer’s data – low flow with correct pump performance but high pressure at nozzle indicates blocked nozzle. | Change over to compliant fuel – bypass and shut down scrubber and inspect and re- secure or clean / clear blocked nozzle(s)  🞎……󠅬……………󠅬 |
| Displaced or blocked nozzles |
| Loss of wash water in system | | Check scrubber system for leakage | Change over to compliant fuel bypass and shut down scrubber and repair source of leakage  🞎……󠅬……………󠅬 |
| Sulphur Content outside of scrubber design limits | Check Bunker receipt for fuel in use for verification of Sulphur content | Take bunker sample for future analysis to confirm Sulphur content | Log entry and reduce load, change mode if necessary in order to obtain compliant SO2/CO2 ratio or change over to compliant fuel.  🞎……󠅬……………󠅬 |
| Sulphur Content outside of scrubber design limits | Fuel Consumption outside combustion unit design limit | Confirm combustion unit design fuel rate against output rating | Correct combustion unit consumption rate  🞎……󠅬……………󠅬 |
| Loss of sealing air | Problem sealing air fan. Exhaust in by- pass | Check sealing air fan | Change over to compliant fuel and repair sealing air fan  🞎……󠅬……………󠅬 |
| CEMS  failure | System Fault – refer to CEMS operational manual (attachment to OMM) and SECP  🞎……󠅬……………󠅬 | | |

**Malfunction type = High supply water pressure**

|  |  |  |
| --- | --- | --- |
| **Possible Cause** | **Inspection Route** | **Action –** if applicable/done -tick and enter time |
| High flow rate | Check pump rate | Adjust flow rate |
| Blocked Nozzle | High pressure at nozzle indicates blocked nozzle | Change over to compliant fuel – bypass and shut down scrubber and inspect and clean / clear blocked nozzle(s).  🞎……󠅬……………󠅬 |

**Malfunction type = Exceedances of Wash water discharge limits**

| **Possible Cause** | | **Inspection Route** | **Action –** if applicable/done -tick and enter time |
| --- | --- | --- | --- |
| Insufficient wash water | Choked sea water suction filter | Check filter(s) | Change over and clean filter(s)  🞎……󠅬……………󠅬 |
| Pump / System valve shut | | Check valve position | Re-set valve(s)  🞎……󠅬……………󠅬 |
| Poor wash water pump performance | | Verify pump performance - pressure and flow against manufacturers data | Change running pump to stand-by pump  🞎……󠅬……………󠅬 |
| Low wash water flow rate | | Verify pump performance - pressure and flow against manufacturer’s data – low flow with correct pump performance but high pressure at nozzle indicates blocked nozzle. | Change over to compliant fuel – bypass and shut down scrubber and inspect and re-secure or clean / clear blocked nozzle(s)  🞎……󠅬……………󠅬 |
| Displaced or blocked nozzles | |  |
| Loss of wash water in system | | Check scrubber system for leakage | Change over to compliant fuel – bypass and shut down scrubber and repair source of leakage  🞎……󠅬……………󠅬 |
| Sulphur Content outside of scrubber design limits | Check Bunker receipt for fuel in use for verification of Sulphur content | Take bunker sample for future analysis to confirm Sulphur content | Log entry and reduce load, change mode if necessary or change over to compliant fuel.  🞎……󠅬……………󠅬 |
|  | Fuel Consumption outside combustion unit design limit | Confirm combustion unit design fuel rate against output rating | Correct combustion unit consumption rate  🞎……󠅬……………󠅬 |
| PAH  Measurement  – inlet/outlet | Instrument Fault | Carryout instrument calibration as recommended in OMM | Recalibrate if required or if instrument is faulty log entry and change instrument.  Continue to run scrubber or bypass scrubber and change over to compliant fuel and arrange urgent replacement of instrument – Advise Flag State, and make required entries in the EGC Record Book  🞎……󠅬……………󠅬 |
| Turbidity Measurement  – inlet/outlet | Instrument Fault | Carryout instrument calibration as recommended in OMM |
| pH Measurement  – inlet/outlet | Instrument Fault | Carryout instrument calibration as recommended in OMM |

**Malfunction type = High exhaust back pressure**

|  |  |  |  |
| --- | --- | --- | --- |
| **Possible Cause** |  | **Inspection Route** | **Action –** if applicable/done -tick and enter time |
| Restriction in scrubber | Blocked droplet or wet filter structured packing | Verify back pressure across the scrubber | 1. Change over to compliant fuel, bypass scrubber and open droplet separator water back wash valves, (as identified on P&ID). 2. Change over to compliant fuel – bypass and shut down scrubber, isolate scrubber and remove structured packing for chemical clean.   🞎……󠅬……………󠅬 |
| Fan stopped (if applicable) | | Check fan operation | Re-start fan  🞎……󠅬……………󠅬 |
|  |  | Unable to run Fan | Change over to compliant fuel – bypass and shut down scrubber carry out required repairs to fan.  🞎……󠅬……………󠅬 |
| Engine overload or boiler combustion fault | | Check engine / boiler performance against manufacturers data | Rectify engine / boiler performance as recommended by manufacturer  🞎……󠅬……………󠅬 |

**Malfunction type = System Start Failure**

|  |  |  |  |
| --- | --- | --- | --- |
| **Possible Cause** |  | **Inspection Route** | **Action** |
| Power supply |  | Check power supply at scrubber MCP and starter panel(s) | Re-start system / Rectify fault causing trip, reset safety circuit and restart system if scrubber temperature is  <140oC  🞎……󠅬……………󠅬 |
| Safety circuit tripped | | Check safety circuit at HMI in ECR | 🞎……󠅬……………󠅬 |

Engineer rectifying fault of ECGS/Scrubber: …………………………….Name:………………………… Rank:……………………………

Chief Engineer: …………………………….Name:…………………………