



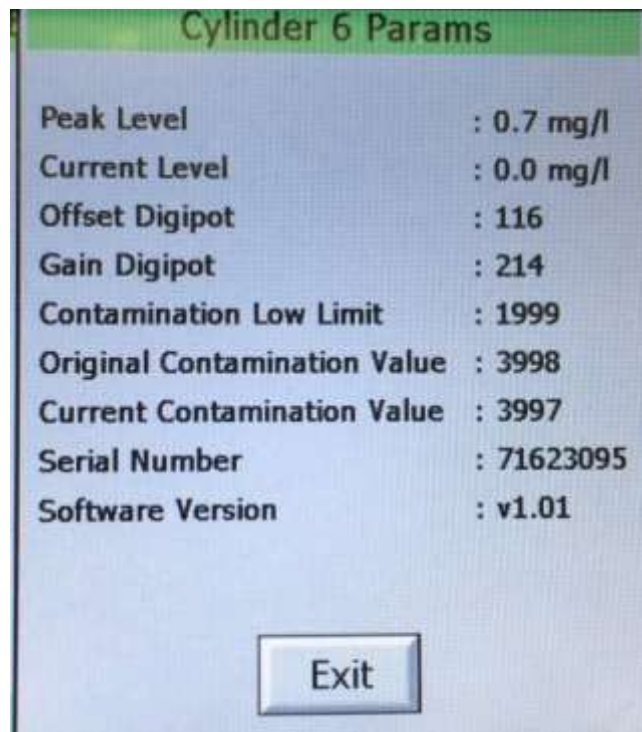
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Graviner Mk7 Oil Mist Detector System Maintenance Schedule

This maintenance schedule is a guide only as every engine is different in its usage, oil, temperature, scrubber performance etc.

WEEKLY:

1. Record current contamination level for each detector head.
 - > From Mk7 Remote Display Unit press the Engineer button
 - > Engineer Mode (Code 012345)
 - > Select the required engine (press the button under the mg/l display for the Engine)
 - > Select the required detector (press the button under the mg/l display for the Detector)
 - > Press the Menu button
 - > Press the Read Params button



Record the Current Contamination Value

See attached spreadsheet example.



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MONTHLY:

(TEST PROCEDURE SHOULD BE DONE WITH NO LOAD ON THE ENGINE).

- Perform Smoke Test at each Detector using the push-in smoke test connector and Graviner Smoke Test kit.

(See Graviner Mk7 IOM Manual or Technical note TN72002 for smoke testing procedure)

TWICE PER YEAR:

(TEST PROCEDURE SHOULD BE DONE WITH NO LOAD ON THE ENGINE).

Perform a visual inspection

1. Externally inspect all Mk7 Control Unit(s) in the OMD system taking note of the condition of all Glands, External Wiring and LED indications displayed.
2. Highlight any holes that are either NOT or incorrectly blanked off as these will affect the IP65 and EMC rating.
3. Internally inspect all Mk7 Control Unit(s) in the OMD system.
4. All Detectors installed on the engine(s) plus any Detector Heads which are considered as usable spares by the vessel (external view), document the status of the LEDs on each Detector.
5. The Remote Display Unit is showing the correct number of Engines and Detectors on each Engine.
6. All other enclosures (external view) and wiring used to connect the OMD relay contacts to the vessel Alarm Monitoring & Engine Shutdown systems.
7. Document the software versions of all system components.

As part of this work document any concerns with:-

- a. Corrosion.
- b. Evidence of burnt components.
- c. Poor quality wiring or incorrectly specified cabling used for power and data communication.
- d. Missing or incorrect EMC glands.
- e. Missing or incorrect screening & earthing.



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- f. Missing blanking plugs or caps.
 - g. Ensure all terminal block connector screws are tight
8. Inspect the contents of the Mk7 Event log.

It is important to understand the contents of the Mk7 Event log as diagnosing and removing the reason for these fault Messages will be part of the Service visit.

Main Engine 1 Event Log						
All Events By Date By Event By Detector						
No.	Date	Time	Event	Detector / Description	Value	
530	07/07/11	11:20:26	System Reset			
529	07/07/11	11:19:59	Accept			
528	07/07/11	11:18:52	Alarm	Detector 1	3.6 mg/l	
527	07/07/11	11:18:52	Pre-Alarm	Detector 1	3.6 mg/l	
526	07/07/11	11:18:51	Alarm Test	Detector 1		
525	07/07/11	11:18:02	Front Panel Test		Passed	
524	07/07/11	11:18:02	Supply Voltage		23.8v	
523	07/07/11	11:17:51	System Reset			
522	07/07/11	11:17:49	Accept			
521	07/07/11	11:17:43	Photodiode Fault	Detector 1		

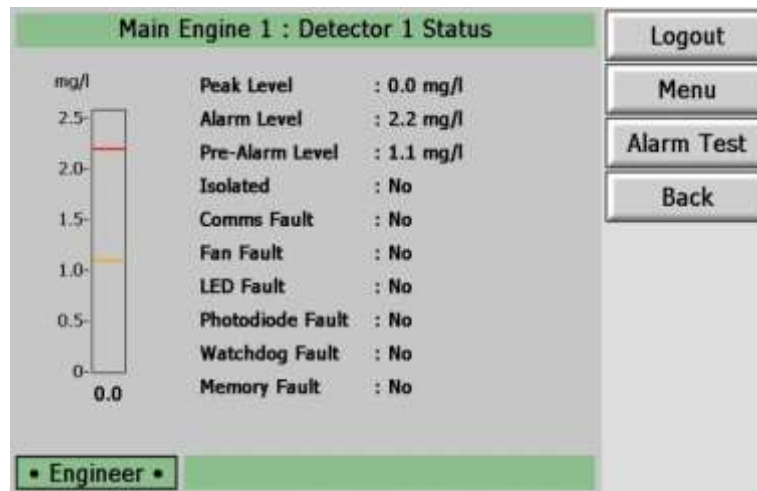
All log events will be displayed.

↑ ↓

Exit

Please photograph and document the Remote Display Unit screens from the Event Log.

9. Check the Status of each Detector prior to any cleaning taking place.



Access the Detector Status Screen for each Detector.

Ensure:-

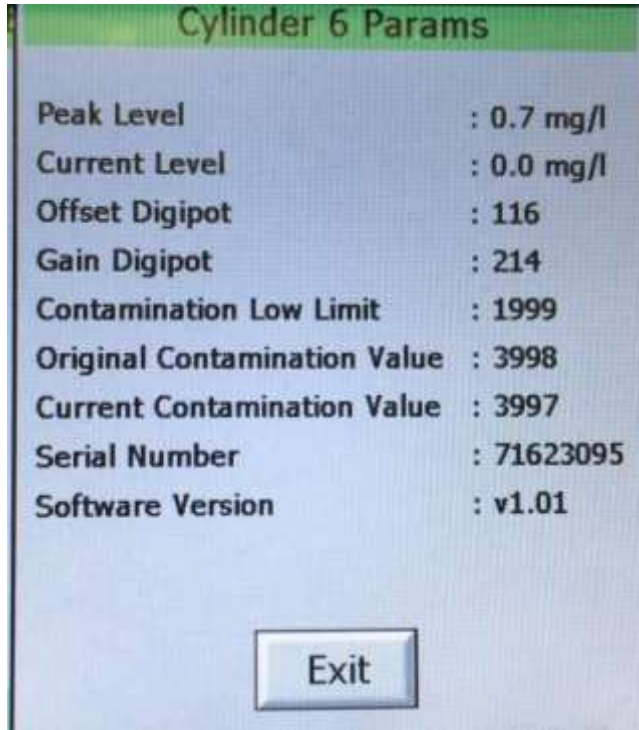
The Alarm and Pre-Alarm level settings are correct,

The Detector is NOT Isolated,

There are NO active Faults shown.

If any Faults are indicated, please take appropriate actions to clear the indication(s).

10. Carry out Parameter readings of each Mk7 Detector prior to any cleaning taking place.



Cylinder 6 Params	
Peak Level	: 0.7 mg/l
Current Level	: 0.0 mg/l
Offset Digipot	: 116
Gain Digipot	: 214
Contamination Low Limit	: 1999
Original Contamination Value	: 3998
Current Contamination Value	: 3997
Serial Number	: 71623095
Software Version	: v1.01

Exit

This will show the current status of the selected Detector and should be used to advise the end customer of the expected service life of the Detector.

The parameters downloaded also include the Serial Number of the Detector (which is sometimes no longer visible on the external label due to exposure to oil) and the software version.

Note the readings for each Detector

Refer to the Graviner Mk7 IOM Manual or Technical Note TN18001 for proper Detector Head removal, cleaning and refitting. Ensure Detector Heads & Detector base O-Ring seals are properly fitted with Molykote O-Ring Lubricant.

Clean each Detector twice using the recommended cleaning buds and fluid and repeat the Parameter Reading process.

Again, note the readings for each Detector

Compare the **Current Contamination Value** with the **Original Contamination Value** after the Detector has been cleaned. Any Detector NOT within 20% of the Original Contamination Value after cleaning should be replaced as it is at the end of its Service Life.



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11. Verify all vital and non-vital alarm functions at Mk7 Control Unit function correctly.

- > From the Mk7 Remote Display Unit press the Engineer button.
- > Enter Engineer Mode (012345)
- > Select the required engine (press the button under the mg/l display for the Engine)
- > Press the Test button
- > Check the correct operation of the Slow Down Relay, Pre-Alarm Relay and Fault Relay.

ANNUAL:

Graviner Authorised Service Engineer to perform complete system inspection.

1. Record serial numbers and software revisions
 - a. Record the Remote Display Unit serial number (found on the rear of the unit)
 - b. For each Control Unit record the type, membrane or non-membrane, and serial number (found on the inside of the lid)
 - c. Record the Remote Display Unit software version (found on the engine overview screen)
 - d. For each Control Unit record the software version (found on the Remote Display Unit engine status screen)
2. Verify all Graviner Mk7 System Functions.
3. Review and record Event log and System Test Log history
4. Clean Detector heads and Detector base Assemblies and renew base O-Rings.
5. Verify cable terminations and earthing.
6. Perform all vital and non-vital alarm functions
7. Review C/E contamination level trending report
8. Upgrade software to current versions
9. Upgrade Detector heads or hardware if required
10. Load current manual on Control room computer
11. Instruct crew on Mk7 procedures & System operation.



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RECOMMENDED ONBOARD SPARES

(REQUIRED FOR ROUTINE MAINTENANCE & TROUBLESHOOTING)

Quantity	Part Number	Description
1	1-D9221-026	Commissioning Kit
1	1-D9221-027	Service Kit
1	1-53836-K272	OMD Mk7 Detector Head

For systems with more than 10 detectors, it is recommended that additional detector head assemblies (Part Number 1-53836-K272) are supplied.

If you have additional questions please contact OMD Technical Support email:
technical@emsgroup.co.uk



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GRAVINER Mk7 OIL MIST DETECTOR SYSTEM WEEKLY CONTAMINATION READINGS

Engine

Detector Name										
Contamination Low Limit										
Date	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value



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APPENDIX 1 - EXAMPLE SHEET

Engine Generator 1

Detector Name	Det. 1	Det. 2	Det. 3	Det. 4						
Contamination Low Limit	1974	1502	1782	1377						
Date	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value	Current Contamination Value
15/06/20	3881	2970	3363	2701						
22/06/20	3652	2506	3153	2875						
29/06/20	3777	2049	2497	2267						
06/07/20	3026	1703	2118	1994						