The hidden dangers of fuel quality in emergency equipment

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Visualize the following scenarios: There has been an emergency and crew/passengers have had to abandon ship. It is dark and freezing cold. The sea is rough. Lifeboat with full complement already on board is still alongside the vessel. Suddenly the lifeboat engine splutters and stops.

Or: The auxiliary engines have tripped. There is a blackout. The emergency generator starts up and comes on load. The emergency lighting comes on. Engineers are working to restart the auxiliary engines. After a few minutes, the emergency generator stops, throwing the engine room into darkness.

Most companies and vessels have procedures in place to monitor fuel quality. Close attention is paid to fuel management of both residual fuels and distillate fuels as this has a direct impact on safety, health and environment as well as on the economic operation of vessels.

However, not much attention appears to be being paid to the quality of fuel being used for emergency equipment like emergency generators, life boat engines and emergency fire pumps.

Cold Flow Properties

The emergency equipment fuel oil should be suitable for operation at the minimum anticipated operating temperature without heating. There are three parameters which measure cold flow properties of a fuel.

The Cloud Point (CP) of a distillate fuel is the temperature at which wax or other solid substances begins to separate from petroleum oil. When a sample of distillate fuel is cooled at a specified rate and examined periodically the temperature at which haziness is first observed at the bottom of the test jar is recorded as the cloud point.

The Cold Filter Plugging Point (CFPP) is the lowest temperature at which the fuel will pass through a filter under specified conditions.

The Pour Point(PP) is the lowest temperature at which the fuel will flow.

The CFPP and PP can be reduced by the use of additives but CP cannot be modified using additives. Hence even though a distillate may have a very low PP, the CP may in fact be high.