



2100/KEA/BDN/37217-2004

2004-10-26

CIMAC Fuel WG

Website Information

Bulletin No. 1

Use of low sulphur diesel fuels in coastal waters

EPA: Proposed Amendments to the Federal Rule 40 CFR 80 signed on April 15, 2003 & ANPRM 40 CFR Parts 9 and 94, dated May 11, 2004

CARB: Assembly Bill 471

Dear Sir,

First we would like to introduce ourselves. CIMAC (International Council on combustion engines) is an international organisation, founded in 1950 to promote technical and scientific knowledge in the field of internal combustion engines. It is supported by engine manufacturers, engine users, technical universities, research institutes, component suppliers, fuel and lubricating oil suppliers, classification societies and several other interested parties.

Within CIMAC there are several working groups. We are the working group "Heavy Fuel Oil", dealing with the use of HFO in diesel engine.

Within our working group we have discussed the CARB / EPA proposals that Ocean going ships must use only distillate fuels (diesel oil) with a low sulphur content and a low content of aromatic components in coastal waters.

We have concluded that we expect several severe problems, when ships are obliged to use such fuels. We would like to express our concerns, which are:

1. There might be a problem with low lubricity of low sulphur diesel fuels. For fuel destined for automotive applications, the fuel usually has a minimum lubricity requirement specified, and will usually contain lubricity additives to raise performance to the specified level.

The same does not apply to Marine distillates. For marine applications, a minimum lubricity is not defined in fuel specifications. There is little or no experience of using very low sulfur fuels without lubricity additives in marine applications. We believe further work is required to establish that such low-sulphur fuels required by the regulations have a sufficient lubricity.

2. Deep-sea shipping entering the coastal waters have to switch from heavy fuel oil to diesel fuel. Such a switching is possible, but requires that detailed procedures be followed exactly, if problems are to be avoided. During operation with HFO, the fuel pumps are hot (about 150°C). Diesel fuel is introduced into the pumps at ambient (engine room) temperature. If the changing of the fuel is done too fast, the combination of thermal contraction of the pump elements, and the low lubricity of the diesel fuel (due to its lowered viscosity in the hot pumps), could lead to sudden seizure of the fuel pumps, and hence loss of propulsive power or electrical blackout on the vessel.
3. The third potential problem, and the one that gives most concern, is compatibility of HFO with low-sulfur/low-aromatics diesel. When switching from HFO to diesel fuel (or vice versa) there is a mixing of these two different fuels. (This cannot be avoided, because of the gradual changeover process required to avoid the problems described under item 2).

If the diesel fuel is not compatible with the heavy fuel, the asphaltenes of the heavy fuel will be precipitated out. The result will be filter clogging, or fuel pump sticking, that again could lead to loss of propulsive power, or electrical blackout on the vessel.

The risk of an incompatibility problem between HFO and low-sulfur / low-aromatics diesel fuel is significantly higher than for a "normal" marine diesel fuel (ISO-F-DMA or ISO-F-DMB). This is because the low content of aromatics means there is less solvency in the HFO/diesel mixture to keep the asphaltenes in solution.

We hope that you consider our expressed concerns regarding the introduction of low sulphur and low aromatic diesel fuels in coastal waters in your further activities.

Yours sincerely

CIMAC HFO Working Group