

OPERATIONAL GUIDELINES FOR THE USE OF SHELL ULSFO



THE GUIDELINES BELOW ARE NOT EXHAUSTIVE AND ARE INTENDED ONLY TO ASSIST IN THE RISK ASSESSMENT PROCESS AND IN HANDLING SHELL ULSFO ON BOARD SHIP. THE GUIDELINES ARE USED AT THE USER'S SOLE RISK AND RESPONSIBILITY AND SHELL DOES NOT ACCEPT ANY LIABILITY ARISING OUT OF OR IN CONNECTION WITH THE USAGE AND/OR THE IMPLEMENTATION OF THESE GUIDELINES.

SHELL'S ULTRA LOW SULPHUR FUEL OIL (ULSFO) HAS BEEN TRIALLED EXTENSIVELY AND HAS BEEN PROVEN TO PERFORM SATISFACTORILY. WITH CAREFUL ATTENTION TO THESE OPERATIONAL GUIDELINES PROBLEM FREE CONSUMPTION IS EASILY ACHIEVABLE.

It is the responsibility of the vessel to manage the changeover from high sulphur fuels in order to meet the legislative sulphur limits required for operating in Emission Control Areas.

In line with good practice, a risk assessment should be carried out by the operator and crew. In particular, the engine manuals should be consulted for advice on any restrictions on the engine load at the time of changeover. The generic guidelines below are to assist in the Risk Assessment process.

STORAGE

- It is not feasible to identify the characteristics of all available bunker fuels and comment on their compatibility with Shell ULSFO and therefore operators should take a cautious approach and, as with other grades of bunker fuel, avoid mixing whenever possible.
- Shell ULSFO should be tested for compatibility with previously bunkered fuel (e.g. using ASTM D4740 spot test) in the ratio that it is likely to mix in the fuel system.
- Receiving bunker storage tanks should be completely empty and free of sludge where possible. A small amount of previously bunkered, unpumpable fuel oil might be expected to remain but should be kept to less than 0.5 % of the quantity of Shell ULSFO to be bunkered. This should avoid significant compatibility issues; reduce possible layering of fuel grades and prevent bunker sounding calculation differences.
- In general, Shell ULSFO does not require heating in the storage tank for short periods under normal climatic conditions, however, the vessel should consider length of storage, climatic conditions, and pour point analysis to determine if heat is required. When being stored for long periods or in cold climates the temperature of the fuel should not drop below its pour point plus an additional 10°C and can be raised to approximately 50°C a day or so before use.
- Steam tracing for all pipelines should be turned off when using Shell ULSFO to prevent over-heating and the risk of "gassing-up".

FUEL HANDLING – GENERAL

- Over the course of time, catalytic fines and sludge from previous bunker fuels may build-up in the bottom of tanks. Shell ULSFO has a cleaning effect on tanks and so cleaning the storage, settling and service tanks prior to using Shell ULSFO is recommended.
- Settling tanks and service tanks should be emptied to as low a level as is safe, before refilling with Shell ULSFO. This is also recommended when changing back from Shell ULSFO to other fuel grades.
- The settling tank should be maintained approximately 65°C; and the service tank at approximately 75°C.
- The purifier heater control should be set to above 80°C, preferably at 85°C. When employing the use of a gravity disc in a purifier this should be consistent with the lower specific gravity of Shell ULSFO.
- Since Shell ULSFO has a cleaning effect on a fuel tank or pipe system, it is suggested to have the initial running of the purifier at the shorter sludge

cycle time to prevent excess build up and carry-over of contaminants from the settling tank. The sludge cycle may then be increased after a few hours of taking suction on the settling tank since Shell ULSFO is a cleaner fuel than most other grades of bunker fuel.

- When Shell ULSFO starts to feed through the fuel service system, additional back-flushing of the fuel auto-filter can be expected because of the cleaning effect. Careful monitoring of all fuel filters is recommended.
- Where a fuel system has not been cleaned recently, or has had other recent issues with filter contamination, it is recommended to have two auxiliary engines running during standby as would be normal; but with one supplied on MDO and the other on Shell ULSFO from the fuel treatment plant.

FUEL HANDLING – With one service tank

- A vessel with only one settling tank should consider stopping the purifier and draining any remaining oil to the overflow tank before refilling with Shell ULSFO. During this time the service tank level can be reduced to a low – but safe – level after which the purifier can be re-started.

FUEL HANDLING – With two service tanks

- Ships with two settling tanks and two service tanks will have greater flexibility and the option of cleaning tanks or draining, opening & inspecting before filling.

FUEL CHANGEOVER

- As well as consulting the main engine manual for load limitations during the fuel changeover, a reduction in cylinder oil feed rate or use of oil with a lower base oil number should be considered. Prolonged use with mismatched cylinder oil should be avoided.

ENGINE CONSIDERATIONS

- The fuel temperature at the main engine and auxiliary engines can be lower than at the purifiers. However, do not allow the temperature in the system to drop below 70°C. A temperature of 75°C should provide sufficient lubricity, but aim to maintain a minimum viscosity of 2 cSt at all times. Excessive heating at the main engine will decrease lubricity.

USE IN BOILERS

- When the ULSFO is to be used in an auxiliary boiler burner, the low fuel temperature trip may need to be adjusted to suit the lower temperature requirement of Shell ULSFO. The temperature setting for the fuel heater should be reduced to around 75°C.