Marine Fuel Management and Switching Operations — study guide

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Burning the right fuel in the right place is now a matter of law, and switching between fuels is a delicate operation. This guide covers the limits, the switching procedures and the records.[1]

Sulphur limits

The **Global Sulphur Cap** reduced the permissible sulphur emission limit to **0.5% m/m** — the IMO 2020 limit for fuel used outside emission-control areas (ECAs). Inside an ECA the limit is stricter still.

What can go wrong when switching

Switching operations carry several risks: failure to adjust the quantity requirements of the burner or fuel injector can result in a loss of power, increased smoke emissions and ignition problems; poor temperature control can result in thermal shock; and mixing incompatible fuels can create sludge, clogging pipes, pumps and filters.

Doing it safely

To reduce the risk of thermal shock, change temperatures at a rate of **around 2 °C per minute**. Follow the change-over plan step by step and watch the fuel temperature, pressure and viscosity as you go.

Procedures and records

MARPOL requires all vessels that use more than one fuel type to carry detailed procedures specifying the emergency procedures in case of engine failure or loss of propulsion, how fuel oils are segregated, and the changeover plan for each passage into and out of an ECA. All steps of the change-over procedure must be recorded in the **Marine Sulphur Record Book**, the **Engine Logbook** and the **Bridge Logbook**.

Key facts to remember

- Global Sulphur Cap: 0.5% m/m outside ECAs (IMO 2020).
- Switching risks: burner/injector mismatch (power loss, smoke, ignition problems); poor temperature control (thermal shock); incompatible fuels (sludge clogging pipes/pumps/filters).
- Change temperature at about 2 °C per minute.
- MARPOL procedures: emergency procedures, fuel segregation, changeover plan for each ECA passage.
- Record every change-over step in the Marine Sulphur Record Book, Engine Logbook and Bridge Logbook.

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Sources

1. IMO MARPOL Annex VI — prevention of air pollution from ships (sulphur limits, ECAs and fuel change-over procedures).