PAMBANSANG PUNONGHIMPILAN TANOD BAYBAYIN NG PILIPINAS
(National Headquarters Philippine Coast Guard)
139 25th Street, Port Area
1018 Manila

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PRESCRIBED FUEL REQUIREMENT FOR PCG OUTBOARD DIESEL ENGINE HIGH-SPEED RESPONSE BOAT

1. GENERAL

Fuel utilization, application and technical specification for the PCG Outboard Diesel Engine High-Speed Response Boat shall be in accordance with this Circular.

2. PURPOSE

A. To establish a standardized and optimal fuel prescription for the Philippine Coast Guard (PCG) high-speed response boat, ensuring maximum performance, efficiency and mission readiness; and

B. Implement effective quality control measures to prevent fuel contamination and ensure compliance with regulatory standards.

3. SCOPE

This Circular shall be applied to all PCG Diesel Engine High-Speed Response Boats.

4. DEFINITION OF TERMS

A. **ASTM D 975 No. 1 and No. 2** – is the standard specification for diesel fuel oils in the United States. No. 1 diesel is a volatile distillate oil, while No. 2 diesel is a lower-volatility distillate fuel oil.

B. **EN 590** – is the European standard that defines the physical properties of diesel fuel for use in diesel engines.

C. **HSRB** – stands for "High-Speed Response Boat", designed for speed and agility, equipped with powerful engines and advanced navigation and communication systems to operate effectively in various sea conditions. It is essential to the PCG's operational fleet, enabling quick and efficient responses to various maritime challenges.

D. **JIS K 2204** – is the Japanese industrial standard for diesel fuels.

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E. **NATO F-54** – is the designation for standard diesel fuel, equivalent to commercial automotive diesel fuel.

F. **NATO F-75** – is a diesel fuel used primarily for marine and ground forces applications, formulated to perform well in extreme conditions.

G. **OpCon** – stands for "Operational Control". It refers to the authority granted to Commanders at various levels to direct and manage the operations of assigned units or forces to accomplish specific missions or tasks.

H. **Prescribed Fuel** – refers to a specific type or grade of fuel that is mandated or recommended for use in a particular context.

5. GUIDELINES AND POLICIES

A. Fuel Specification and Standardization

i. The PCG shall use only the prescribed type and grade of fuel or its equivalent for all HSRB as defined by the OXE's Manual recommendations and operational requirements.

ii. The specified fuel must meet national and international standards for marine fuel quality.

B. Fuel Performance and Quality Assurance

i. Regular testing and evaluation of fuel quality shall be conducted to ensure compliance with prescribed specifications.

ii. Any deviations in fuel quality and corrective actions taken to prevent engine damage or performance issues must be reported immediately.

C. Storage and Handling

i. Fuel should be stored in clean, dry and well-ventilated conditions to prevent contamination, degradation and spillage, while maintaining its quality. The Boat Captain and Engineers are responsible for ensuring proper fuel storage.

ii. Proper handling procedures must be followed during refueling operations to ensure safety and maintain fuel quality.

6. RECOMMENDED FUEL FOR OXE DIESEL ENGINE BASED IN OXE300 USER MANUAL

According to the OXE's Manual, it is highly recommended to use diesel fuel with a cetane number (CN) of 60. The cetane number measures the ignition quality of diesel fuel, with higher values resulting in improved combustion, smoother engine operation and reduced emissions. For comparison, standard diesel fuels typically have a cetane rating of 40–55, while premium or high-performance diesel fuels range from 55–65 CN. OXE Marine's recommendation of 60 CN ensures optimal performance and efficiency.

In addition to cetane rating, sulfur content in diesel fuel is a crucial factor affecting engine performance and emissions. Diesel fuel is classified into different categories based on sulfur content: **Ultra-Low Sulfur Diesel (ULSD)**, which contains **≤ 15 ppm** sulfur and is commonly used in Europe, United States and other regions; **Low-Sulfur Diesel (LSD)**, which contains **≤ 500 ppm** sulfur but is less common today; and **High-Sulfur Diesel**, which has over **500 ppm** sulfur and has largely been phased out due to environmental concerns. Given modern emission standards and the need to ensure engine durability, OXE Marine likely recommends using **Ultra-Low Sulfur Diesel (ULSD) with ≤ 15 ppm sulfur content**. This helps reduce engine wear, lowers emissions, and ensures compliance with environmental regulations.

The table shown below provides information about the types of fuel compatible with the OXE Diesel Engine. The following are the listed fuel standards:

A. **EN 590** – This is the European standard for diesel fuel, ensuring compatibility with environmental and cold-weather regulations in different countries. It defines fuel quality and performance requirements.

B. **ASTM D 975 No. 1 and No. 2** – These are American standards set by ASTM International for diesel fuel.

   i. **No. 1 Diesel** is a lighter, more refined fuel that performs well in cold weather.

   ii. **No. 2 Diesel** is the standard diesel fuel used in most engines, offering better energy content and efficiency.

C. **JIS KK 2204** – This is the Japanese Industrial Standard (JIS) for diesel fuel, ensuring compliance with Japanese regulations and performance criteria.

D. **NATO Code F-54 and F-75** – These are military-grade fuel standards used by NATO forces.

   i. **F-54** is equivalent to commercial diesel (similar to EN 590 and ASTM D975 No. 2).

   ii. **F-75** is a special low-temperature fuel designed for extreme cold environments.

FLUID	QUALITY
Fuel	✓ EN 590 (with national environment and cold weather standards) ✓ ASTM D 975 No.1 and No.2 ✓ JIS KK 2204 ✓ NATO Code F54 and F75

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iii. **Equivalent Diesel Fuels from Petron, Shell and Caltex**

SUPPLIER	PRODUCT NAME	SULFUR CONTENT	KEY FEATURES
Caltex	Caltex Diesel with Techron® D	0.05% (500 ppm)	Superior cleaning power, improved efficiency, enhanced protection, reduced emissions
Petro Gazz	DZL Power	0.05% (500 ppm)	High efficiency, meets modern diesel engine standards
Petron	Petron Turbo Diesel	0.05% (500 ppm)	Improved fuel efficiency, enhanced performance, reduced emissions, engine cleanliness and protection
Seaoil	EXCEED DIESEL	0.05% (500 ppm)	Optimal performance, protection for modern engines
Shell	Shell V-Power Diesel	0.05% (500 ppm)	High cetane number, advanced cleaning agents, enhanced lubricity, improved fuel economy
Unioil	Euro 5 Diesel	0.05% (500 ppm)	Excellent engine performance, environmental compliance

Therefore, it is recommended to use equivalent diesel fuels as shown on the table above for HSRB engines, ensuring compliance with the required octane rating to achieve the engines' full potential and optimum performance.

7. DUTIES AND RESPONSIBILITIES

A. Boat Captain/Boat Engineer

i. Ascertain that the prescribed fuel is the only fuel to be loaded in their HSRBs.

ii. Shall conduct pre-inspection before deployment and post-inspection after deployment after every mission.

iii. Submit a comprehensive inventory report every 25th of the month to the OpCon unit and furnish copy to Coast Guard Fleet (Attn: F-10) of the same.

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iv. Maintain a detailed fuel log that tracks fuel usage, refueling activities and inventory levels.

v. Report all minor and major derangements of the HSRBs to designated District or OpCon units.

B. **All District/Unit Commanders/OpCon Units**

i. Shall be UPR on all OpCon HSRB;

ii. Monitor the fuel consumption of HSRB and subsequently request the required fuel allocation from NHQ-PCG (Attention: DCCGS for Logistics, CG-4).

iii. Create a Boat Operations Logbook to record all official deployments of HSRB, including but not limited to type of operation, name and number of crew and passengers, purpose of deployment, date and time of departure or arrival, running hours and minutes per utilization, fuel consumption and existing or new developments.

iv. D-10 or its equivalent unit shall conduct spot/monthly inspections and submit a comprehensive inventory report (see ***Annex A***) to NHQ-PCG every 10th and 25th of the month (Attn: O/CG-10).

v. Coordinate with logistics support units to ensure timely delivery and replenishment of required fuel supplies.

vi. Ensure the strict implementation of this Circular.

C. **Commander, Coast Guard Fleet**

i. Shall be in charge of designating the required and qualified boat crew.

ii. Consolidate all reports from the recipient units of all HSRB and submit them to NHQ-PCG, (Attn: O/CG-10).

iii. Monitor and supervise the strict implementation of this Circular.

D. **Deputy Chief of Coast Guard Staff for Logistics, CG-4**

i. Ensure the availability of prescribed fuel in all operational bases and ensure fuel suppliers are vetted and certified to guarantee the consistent quality and reliability of fuel supplies.

ii. Ensure strict compliance with the Circular.

8. RESCISSION

All other instructions or publications in conflict with this Circular are hereby rescinded.

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9. EFFECTIVITY

This Circular shall take effect upon publication.

BY COMMAND OF ADMIRAL GAVAN PCG:

OFFICIAL:

HOSTILLO ARTURO E CORNELIO
RADM PCG
Chief of Coast Guard Staff

JAYSIEBELL B FERRER
CDR PCG
Coast Guard Adjutant

Annex A – Comprehensive Inventory Report

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Annex A

Comprehensive Inventory Report

BOW NUMBER/BOAT NAME	OPCON UNIT	STATUS	MANUFACTURE BRAND	HORSE POWER	SERIAL NUMBER	DATE ACQUIRED	DERRANGEMENT	DATE CONDUCT PMS	REMARKS

Prepared By:

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Approved By:

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