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Ships and marine technology — Vessel machinery operations in polar waters — Guidelines

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 8, *Ships and marine technology*, Subcommittee SC 3, *Piping and machinery*.

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Ships and marine technology — Vessel machinery operations in polar waters — Guidelines

1 Scope

The intent of this International Standard is to provide guidance to ship design and operational personnel (crew) on the critical issues to consider regarding machinery, prior to and during vessel operations in the extreme conditions of the Earth's polar regions. This International Standard is intended to supplement the IMO Code for Ships Operating in Polar Waters and the IACS UR "I", Requirements Concerning Polar Class. Although the application of this International Standard is primarily concerned only for ships operating in polar regions, some of the design considerations and planning might need to be implemented during construction or in a shipyard environment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8217, *Petroleum products — Fuels (class F) — Specifications of marine fuels*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply

3.1
cetane number
measure of ignition quality, or ability of a fuel to ignite, in a diesel engine

3.2
CFFP
cold filter plugging point
lowest temperature at which a given volume of diesel fuel will pass through a standard filter in a prescribed amount of time

4 Cold weather diesel engine operations

4.1 General

Operators should review their diesel engine procedures to ensure that they have a special set of operating procedures for the colder months. Procedures for summer conditions might not be adequate in extremely cold conditions.

4.2 Starting diesel engines in cold weather

Diesel engines shall be adequately prepared for starting in lower temperatures. Weak batteries might not crank the starter motor fast enough or long enough to start a cold engine. As the temperature goes down, so does battery capacity. A battery that has all of its power available at 27 °C (80 °F) will have only about 46 % available power at –17 °C (0 °F). Also, the engine will be much harder to start at –17 °C because of cold, thicker oil and resistance to movement of internal moving parts. In effect, an engine is about five times harder to start at –17 °C than at 27 °C. Test weak or suspicious batteries under load before cold weather to help identify potential problems (see Clause 6 and Annex B). If batteries need

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