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Marine technology — Marine environment impact assessment (MEIA) — Performance specification for in situ image-based surveys in deep seafloor environments

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Foreword

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This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 13, *Marine technology*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

From the mid-1990s, attention has been paid to potential environmental impacts to deep-sea environments caused by sea debris, bottom trawling, seabed mining, etc[2].

In situ observations of the deep-seafloor provide useful data sets to assess the amount of natural variation in biological systems over a range of different spatial and temporal dimensions[3]. They can also provide data on recruitment and community succession patterns. Imaged-based surveys are an integral component of underwater surveys conducted both with moving platforms (e.g. ROVs, HOVs, AUVs)[4, 5, 6], and stationary platforms (e.g. moorings, buoys, standalone seabed platforms, cabled observatories)[7, 8]. The images have the potential to provide a broad range of significant scientific information and educational benefits long after data acquisition and are non-destructive to the monitored environments. In order to obtain the necessary spatial coverage for robust statistical analyses of the intrinsic variability within environments and their associated biological ecosystems, it is necessary to deploy multiple standalone seabed platforms concurrently[9].

In the case of seabed mining operations, it will be necessary to accumulate long-term data sets of different environments within the proposed mining field and downstream where any sediment plumes can be expected to be transported in order to detect and monitor any environmental impacts due to the extraction and processing of minerals (see ISBA/25/LTC/6). As such, a standard for long-term in situ image-based surveys in deep sea environments needs to be developed for use in such scenarios.

This document gives specifications for in situ image-based surveys in deep seafloor environments to be used for marine environmental impact assessments and other purposes where a long-term image-based survey in the deep-sea is required.

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1 Scope

This document specifies minimum requirements and provides recommendations for the gathering of image-based data at seafloor where epifauna and benthopelagic fauna with a minimum dimension of 1 cm are used as a proxy for the status of the biological community.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISA[1)] ISBA/25/LTC/6, *Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area*, 2013. Available at https://www.isa.org.jm

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISBA/25/LTC/6 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
autonomous underwater vehicle
AUV
underwater robotic vehicle that does not have a tether to the surface

Note 1 to entry: AUVs are pre-programmed to operate over a particular course or to respond to sensor data or perhaps acoustic commands. Applications include surveying, scientific data collection and mine-hunting.

3.2
benthopelagic
pertaining to the zone very close to, and to some extent having contact with, the sea floor of deeper portions of the open ocean

1) ISA: International seabed authority.