

TEMPLATE FOR COMMENTS

<i>Document reviewed</i>	
Title of the draft being reviewed:	Draft guidelines for the establishment of baseline environmental data
<i>General Comments</i>	
<p>Generally, it is recommended to focus the document on guidelines for best practice and clarify the purpose of, or remove, the scientific commentary. Greater coherence between sections would be useful, as some sections list oceanographic techniques and provide no guidelines on preferred technique, whereas other sections list methods in a prescriptive manner. As written, the guidelines are mainly focused on polymetallic nodules. It is suggested that they should be exclusively focused on nodules to make the documents straightforward to integrate with forthcoming documents for other resources.</p> <p>Generally, further guidance on what levels of sampling are recommended, the regions that recommendation applies to, and what constitutes best practice would be helpful.</p>	
<p>The habitat classification component of this document (also noted below at page 38, line 1467) is under-developed compared to the existing body of literature on this topic. Further expert guidance is needed to get this component up to the level of quality needed.</p>	
<p>eDNA sampling should be required as part of the stratified random biological sampling regimen. Visual video transects and small substrate samples can only sample relatively small areas and will not be able to capture a complete picture of the biological diversity in the lease area and adjacent potentially impacted areas. eDNA is a critical tool in obtaining a more representative biological baseline.</p>	

Text in this guideline creates confusion regarding the legal nature of the document and its relationship with other ISA documents. Page 4, lines 74-80 provides:

These Guidelines should be read in conjunction with the Exploitation Regulations, the relevant Exploration Regulations, other relevant International Seabed Authority rules, regulations and procedures, as well as other relevant Standards and Guidelines, including but not limited to those related to:

- Environmental Impact Assessment and Environmental Impact Statement;
- Environmental Management and Monitoring Plan; and
- Environmental Management Systems.

While in the context of this recommendatory guideline, this language may not be problematic, this language is representative of the apparently confusing relationship between the Regulations/Standards/Guidelines. Perhaps one fix would be to add a sentence noting that the Convention/Regulations/Standards govern in the event that there is a conflict.

Specific Comments

Page	Line	Comment
4	65	Please delete “primarily.” For clarity, the document should be general to all resource types or specific to one.
5	135	Please reference the appropriate study leading to the 20-year recommendation.
5	99	Propose adding clarifying text as follows: “The <u>environmental</u> baseline data that should be collected . . .” This text would clarify the scope of this Guideline as limited to environmental data parameters. The EIA process envisions consideration of other baseline data, such as information regarding other uses of the marine environment, which are not addressed in this document.

5	104	Add "Cultural Resources"
5	127	<p>ESRI's Ecological Marine Units could be a helpful reference here (https://www.esri.com/en-us/about/science/ecological-marine-units/overview).</p> <p>ESRI's description: "EMUs come from an unprecedented 3D point mesh framework of 52 million global measurements of 6 key ocean variables over a 50-year period at a horizontal resolution of 1/4° by 1/4° (~27 km x 27 km at the equator), over 102 depth zones. Multivariate statistical methods clustered the data into EMUs which were then verified by leading oceanographers. The result is a standardized, rigorous, and ecologically meaningful set of units which may be used as a basemap beneath an organization's own GIS data for climate change impact studies, conservation priority-setting, economic and social valuation, and marine spatial planning." This could lead to more consistency among applicants. This should be viewed as a useful reference, not as a replacement for additional site-specific data gathering and analysis.</p> <p><u>Reference Paper: https://doi.org/10.5670/oceanog.2017.116</u></p>
5	140	Please clarify what is meant by "vertical layer" and "strata." It is unclear what is being described and therefore the validity of the assertions cannot be evaluated.
6	156	Add " and backscatter" right after bathymetry: "...be defined based on ship-based bathymetry and backscatter and seafloor acoustic..." Backscatter can be very useful in guiding a stratified sampling approach as it can show differences in seafloor properties (if correctly collected, processed, and interpreted).
6	Figure 1	In Figure 1, the "physiographic units" categories should be expanded to capture finer resolution geomorphic features. For instance, the "seamount" unit could be further refined to "seamount slope," "seamount ridge," "seamount flat (guyot)," "seamount valley," and "seamount shoulder (transition zone from seamount slope to seamount flat - often biological hotspots)." An example of how to classify these units can be found here .
7	179-194	Suggest deferring to the specific section for vertical sampling resolution, since it is imprecise in this section.
8	225	Should read "Best Available Techniques" for consistency with ISBA/25/C/WP.1

8	231	This appears to suggest that baseline data collection is either not recommended, or is recommended less extensively, within preservation and impact reference zones. Please clarify.
8	245	Will the ISA have a role in facilitating such exchanges?
9	251	Is there a role for the ISA in facilitating this recommendation?
9	266	Is creating models a recommendation of the baseline data collection? If so, further clarity is required.
9	273-274	Suggest striking. Validation of methods, including measurement of standards and intercalibration exercises should be generally recommended, even in the absence of observed large deviations.
10	296	The conflation of "guidelines" and "requirements" occurs here.
10	303, 317	These statements are too vague. Cite specific metadata standard requirements (e.g., ISO 19115, https://www.fgdc.gov/metadata/iso-standards).
10	305	How frequently should raw and derived data be submitted?
10	305-306	Are there specific Global Data Assembly Centres being referenced here? Propose being more clear about what is meant by Global Data Assembly Centres as we are unfamiliar with that as a term of art. Finally, suggest being more explicit on what is meant by "open access," for example by laying out the FAIR (Findability, Accessibility, Interoperability, and Reuse) principles of digital assets.
10	311	Generally, the collection of "data" is different from scientific interpretation of that data. The latter is what is published in scientific journals and conferences. The former is what is being requested in this document.
12	379	Is there a document that these recommended distances derive from?
12	395	Strike or clarify "a limited number?" This language is confusing.

13	439	This section is a list of possibilities but does not provide guidance on best practice.
14	486	This section is a list of possibilities but does not provide guidance on best practice.
15	528	This section describes optical properties and a variety of techniques to measure these properties. It is unclear which properties should be measured, where, and with what frequencies.
18	625	This section needs clarity. Is the suggestion that any models need to be published in peer-reviewed scientific literature?
20	716	Add "chemical speciation" between "metal" and "organism"
20	736	This section is a list of possibilities but does not provide guidance on best practice. Further possibilities not listed include water bottle sampling on ROVs and electrochemical sensing on AUVs, ROVs and CTDs.
21	754	Strikethrough "the GEOTRACES initiative" which does not provide information for sediment or pore water analyses.
22	806	Is there a reason chemical oceanographic measurements are recommended at 100 km intervals, whereas physical oceanographic measurements are recommended at 50 km intervals?
22	814	The depth of the discharge plume should be better defined prior to establishment of baseline sampling, as it should be a region of focus for the baseline. If it is not known the range of possibilities should be used and the sampling focus depths updated accordingly.

23	844	The detail in prescription of this method is inconsistent with the rest of the document.
24	872	Inconsistent with lines 835-840 which recommend omitting ammonia and silicic acid.
25	927	Remove "sensor tip diameter"
25	944	The notation should be consistent with the nutrient data, which was recommended as mol/ L
26	967	Strike though "using ROV deployed profiling devices"
35	1361	These abyssal plain regions are interspersed with hard rock seamounts. Recommended geologic data for seamounts should be included, or it should be stated that geologic data collection is only recommended in a subset of the contract area.
36	1393	Recommended resolution for habitat mapping and sampling should also be provided. This section is focused on sediment sampling
54	2180	Discussion of polymetallic sulfides does not appear relevant to this polymetallic nodule focused document and should be removed.

55	2200	Guidance on determining appropriate proxy species should be provided.
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