



Dr. Vijay Kumar
Scientist 'G'

भारत सरकार
पृथ्वी विज्ञान मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES

To

Mr. Michael W. Lodge
Secretary General,
International Seabed Authority,
14-20, Port Royal Street,
Kingston, Jamaica.

No. MoES/PMN/ISBA/EIA/110/2020-PC-II

Date: 18th June 2020

Sub. Response to stakeholder consultation on EIS for nodule collector trials in Central Indian Ocean Basin by MoES (Govt. of India)

Dear Sir,

We are encouraged to find that India's proposed mining test plan and its attendant EIS has attracted the attention of a number of stakeholders with their valuable suggestions (List attached). As stated, the objective of India's test plan is to test the functionality of the components of the mining machine with minimum impact on the environment. India is in a position of advantage since it conducted a much larger scale of disturbance way back in 1997 with monitoring over a long period of time. The monitoring data and analysis have been presented in detail in Annual Reports and also summarised in EIS suggesting that the experiment did not produce any significant impact on the marine environment. Our confidence that the proposed test plan will also not result in any significant impact stems from the results of the previous experiment given that the scale of disturbance in the proposed test plan is a fraction (2% approx) of the previous scale.

It may also be recalled that Indian efforts in exploration and EIA studies have a history of decades. The development of Guidelines on generation of environment data by LTC has been an evolving process. The EIS approval process was mandated only for a threshold of 10,000 sq m. of disturbance area resulting from any sampling activities. However, for the mining tests, EIS approval process was specified for any scale irrespective of the size of the disturbance area in the Guidelines issued by LTC in 2019 which also updated the scope of the environmental data

generation. EIS was submitted by India in compliance to this requirement. India's plans for undertaking mining tests and preparatory activities for the EIS were nearly completed before 2019. Against this background, the Authority will appreciate that it may not be fair to expect compliance to Guidelines issued by LTC in 2019 and 2020 in their entireties.

Based on the comments received from various stakeholders, our response on the major observations are summarised below. However, we urge the Authority and the various stakeholders through the Authority to view the EIS and the following response in the light of the background and explanation presented above.

MoES would like to offer its response as follows:

1. India has had one of the longest environmental programmes for nodule mining and we have been one of the few contractors to have conducted a benthic impact experiment as early as 1997, much before the first environmental guidelines were issued by ISA in 2013, indicating our commitment to marine environmental conservation.
2. This programme not only included a detailed impact assessment plan based on pre and post disturbance environmental data, as well as long term monitoring but also an elaborate environmental variability data collection in and around the application / contract area, the results of which have been presented in the EIS.
3. It is important to note that all of the environmental data described above was collected prior to 2013 and all efforts were made to conduct these studies with best available techniques and as per the best judgment of the scientists at that time and in the absence of any guidelines. Hence, it would be not practical to expect compliance to ISA guidelines issued in 2013 or later for activities that were conducted prior to 2013.
4. Even the identification of IRZ and PRZ was done before 2015 with due consideration to similarity in nodule abundance and sediment type with similar depth ranges, and the locations were reported in the annual report of 2015 submitted to ISA, whereas the criteria for selection of IRZ and PRZ was issued by ISA in 2018. The location of PRZ was selected at a distance of 60 nautical miles from IRZ, and is not expected to be impacted by the

collector trials, based on the plume dispersion model developed earlier for a disturbance larger than this. Further, benthic biological data of 2015 cruise shows the major macrofaunal and meiofaunal groups both in IRZ and PRZ are similar, with local differences in relative abundances of different groups within each area.

5. Here, we would like to offer a clarification that the abyssal hills seen in the bathymetry maps of IRZ and PRZ are either at the edge of these areas or outside, as the area surveyed was larger than the actual area of IRZ and PRZ, the outline of which will be superimposed on these maps for clarity. In fact, this has been clarified in the annual report submitted to ISA in 2017, in response to a query regarding the same point.
6. For collection of baseline data in IRZ and PRZ during 2015 and in 2019, efforts were made to follow the environmental guidelines issued by ISA in 2013 as well as in 2019 to the extent possible. With regards to data for the parameters not collected until now, it is proposed to do so during the environmental data collection before the collector trials. Also, the actual location of the test site within the IRZ will be based on the planned high resolution ROV survey, which are proposed to be conducted before the collector trials, for which necessary procurement actions are in progress.
7. A concern about the requirement of statistically defensible data in the IRZ has been raised. Here we would like to mention that once the area is selected using ROV surveys for nodule collector test, a number of stations are planned to be occupied in and around the test area before the experiment by various sampling equipment, which will provide statistically useful data for the collector site. A similar approach has been used for collection of benthic environmental data (including the biological data) in and around the contract area on regional and local scales, as well as that of temporal and seasonal variability in N-S transects, that have been included in the EIS.
8. We specifically appreciate the suggestion of the stakeholders for evaluating high-resolution bathymetry as well as megafauna in IRZ and PRZ, which are proposed to be carried out using ROV just before and after the nodule collector trials, for which the system is proposed to be acquired / hired. Similarly, it is proposed to assess the sediment plume movement with

short moorings with current meters, sediment traps etc. which will be deployed in the test site before the collector trials and retrieved after the collector test. However, for predicting the likely impact, we have relied on the previous studies that have indicated extremely weak currents ($<2\text{m/sec}$) close to the seafloor leading to restricted migration of sediment plume.

9. With regard to the query regarding technical details of the nodule collector system, we would like to mention that the total width of the nodule collector system would be 4.6 m (i.e. 4 tracks of 0.75m width each = 3.0 m and 2 pickup rakes of 0.8 m each = 1.6 m, giving a total width of $3.0+1.6\text{ m} = 4.6\text{ m}$). Hence, the total area disturbed by the 2 pickup devices along the 1000 m testing track will be 1600 m^2 [$2 \times 0.8\text{m width} \times 1000\text{ m}$], whereas the total area directly impacted by the collector movement will be 4600 m^2 [$4.6\text{m width} \times 1000\text{m testing track}$]. Considering that maximum depth of soil penetration due to the collector system movement and nodule collection is 0.3 m, the total volume of sediment disturbed by the collector device over a testing track of 1000m length will be 1380 m^3 [$4.6\text{m width} \times 0.3\text{m penetration} \times 1000\text{m length}$], Here, it is important to highlight that the scale of the proposed collector trial, that will be about 1% of the distance covered and 2% of the area covered to that of the benthic disturbance experiment conducted in 1997, is comparable to a dredging operation for nodule collection.
10. As pointed out by a stakeholder, the unit for the density of sand was incorrectly used due to oversight. However, computation for the volume of the sediment that will be disturbed/resuspended either on the sea floor or in the water column will remain unchanged.
11. Some of the comments suggest that comparison be made with data available from CCFZ and other nodule areas. We would like to point out that there are differences between nodule abundance, coverage, exposure, association with biota, faunal diversity and abundance between Pacific and Indian Oceans and thus are not comparable for various parameters. However, the published results of benthic biological studies by other international groups in nodule areas of Central Indian Ocean Basin conform to those presented in our EIS.
12. There are several suggestions on requirement of collection of data on additional parameters, which appears to be impractical and non-essential at this stage. For example, a suggestion of

inclusion of estimation of likely CO₂ emission from the ship during the nodule collector test is made. We would like to submit that the emission will be the same as that of any research vessel undertaking a regular oceanographic expedition for research purpose.

13. Some of the stakeholders have asked for additional documents/ information / procedures (such as scoping report, pre-EIS consultations, more time for responding to EIS etc.) not specified in the ISA guidelines. However, we would like to mention that the EIS has already considered the components suitable for an EIA process, such as: defining clearly the study area; establishing the most important issues for the EIA; identifying primary data needs for surveys; establishing suitable methodologies to assess impacts; and establishing suitable terms of reference for the EIA, which are all usually built in the scoping process.
14. Some of the stakeholders have also asked for modification / combining of information given in tables and figures for better understanding. While we understand that such practice is helpful in visualizing data in research papers, we would like to point out that each figure and table has been prepared to represent information relevant to a particular section and these can be referred to accordingly.
15. It is important to note that different data sets have been used for representing different parameters that may not have been collected at the same time. Also it is not possible that all parameters were collected at same locations (eg. nodule abundance and faunal density) due to distinct objectives of the cruises and sampling gear used. Hence, as suggested by some stakeholders, it is not possible to have all data represented in each figure in all the sections of the EIS.

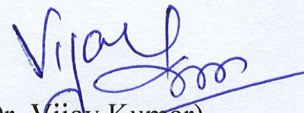
In view of the above background and response, we request the Authority to accord approval of the EIS including the explanation submitted to allow detailed planning of the proposed mining test.

Covid-19 pandemic is a great global challenge and India is no exception. We hope that the disruption affecting the present pace of progress will soon get normalised and the targets realised.

The Ministry of Earth Sciences avails itself of this opportunity to renew to the Secretariat of the ISA the assurances of its highest consideration.

With warm regards,

Yours Sincerely,



(Dr. Vijay Kumar)

List of Stakeholders who provided suggestion on EIS for nodule collector trials in Central Indian Ocean Basin by MoES (Govt. of India)

1. The Pew Charitable Trusts
2. Fauna & Flora International
3. Mr. Yuan Chao, First Institute of Oceanography, Ministry of Natural Resources, China
4. The Deep-Ocean Stewardship Initiative ("DOSI")
5. Benioff Ocean Initiative, University of California, Santa Barbara
6. The Deep Sea Conservation Coalition (DSCC)
7. Changsha Research Institute of Mining and Metallurgy Co., LTD (CRIMM), China
8. Goa Foundation
9. Institute for Advanced Sustainability Studies e.V. (IASS), Germany