International Seabed Authority ISBA/16/LTC/4

Legal and Technical Commission

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Summary of environmental work carried out by contractors

1. In order to assist its consideration of contractors' annual reports, the Legal and Technical Commission has requested each contractor to provide a summary of the environmental work it has carried out since signing its contract with the Authority. The present document was prepared by the secretariat on the basis of a preliminary review of the annual reports submitted by the contractors, and contains a summary of the environmental work they have carried out up to and including 2008.

2. This document does not, however, attempt to address whether the work is consistent with the environmental recommendations issued by the Legal and Technical Commission in document ISBA/7/LTC/1/Rev.1. None of the data presented by the contractors have been evaluated by the secretariat, so no comments can be made regarding the scientific validity or implications of the analysis presented. However, it should be noted that there is a great deal of variation in both the quality and quantity of information presented both from year to year and between contractors.

3. The secretariat has initiated a more in-depth analysis of the data presented by contractors in each reporting year, including whether the environmental recommendations of the Legal and Technical Commission have been followed. The secretariat will be in a position to present a progress report on this work to the Legal and Technical Commission during the sixteenth session of the Authority in 2010. This document will contain a table showing which data indicated in the recommendations have been presented by each contractor during each reporting period and in what form they have been presented. The Commission may then consider whether this task is worthwhile and make a recommendation as to the resources the secretariat should commit to this task.

I. China Ocean Mineral Resources Research and Development Association

4. The environmental work carried out by the China Ocean Mineral Resources Research and Development Association (COMRA) has dealt with the natural

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variability of the environment. The project is referred to as “natural variability of baseline”. As part of this study COMRA has carried out five research cruises to its claim area to collect environmental data. The data collected include physical, chemical, biological (including molecular biology), geological and meteorological parameters. Details were provided on the techniques used and descriptive analysis was supplemented with summary graphs and maps of sample locations. COMRA analysed temporal and spatial variation in the parameters measured.

5. In 2001, COMRA carried out environmental impact studies of the pre-pilot equipment test. This study involved a test of a mining system in a shallow lake using artificial nodules. A summary of the procedures followed and the results obtained was presented. The report states that there was only a small impact on the environment, but this may be a result of the coarser sediment in the lake compared to that in the deep sea creating less of a plume, and any disturbed sediments rapidly settling out of the water column. The report suggests that the limited impact may also be a result of the small scale and short duration of the test.

6. COMRA annual reports state that $2.1 million has been spent specifically on the natural variability of baseline programme. In addition, $2.1 million has been spent on “investigations at sea” and “resource evaluation and environmental impact”. COMRA has spent $3.2 million on other activities that may be related to environmental investigations, including sample storage and upgrading of databases.

II. Deep Ocean Resources Development Co. Ltd.

7. Every annual report of the Deep Ocean Resources Development Company (Japan) states that environmental work will not be carried out until the next phase of work, when the mining of polymetallic nodules has been shown to be commercially viable. However, the earliest report does contain a brief description of meteorological conditions, although it is not stated when the information was collected.

III. Federal Institute for Geosciences and Natural Resources

8. The Federal Institute for Geosciences and Natural Resources of the Federal Republic of Germany signed its contract in 2006. While its annual reports state that no environmental work has been carried out, they also note that there has been preparation for research cruises to study, inter alia, the biodiversity of the claim area. Research cruises have cost a total of €2.3 million but have been classified in the budget under “exploration activity”.

IV. Government of India

9. The Government of India has grouped its environmental work under the heading “Indian deep-sea environment experiment”. This project involves three phases. Phase 1, the collection of pre-disturbance baseline data, was carried out in 1996 and 1997. Phase 2, the disturbance phase, was carried out in 1997. Since signing its contract with the Authority in 2002, the Government of India has concentrated on phase 3 of the programme, which is concerned with monitoring

recolonization after the disturbance. In addition, the contractor has noted that the study area accounts for less than 0.5 per cent of the total area likely to be retained for mining, and that it is not appropriate to extrapolate the results from a small study area to the larger region. It has, therefore, also been addressing natural variability on spatial scales and creating an environmental database of the Central Indian Ocean Basin.

10. Four research cruises related to environmental work have been carried out since 2002. During these, samples have been obtained to evaluate geochemical and biological parameters including seasonal variability, and plume characteristics, which have been modelled. The methods used are detailed in each of the annual reports along with some of the sampling locations. Results have generally been expressed descriptively, unaccompanied by raw data or graphical or statistical analysis. According to the reports, the results suggest that the environment is recovering from the disturbance in 1997, but the restoration is incomplete. The contractor notes that the physical environment is recovering more rapidly than the biological communities within the same areas.

11. According to the annual reports for 2002 to 2006, a total of $119.7 million was spent, but the budget was not divided into headings to determine how much of this was related to environmental work. Since 2006, a total of $6.6 million has been spent by the contractor on “environmental impact assessment”.

V. Institut français de recherche pour l’exploitation de la mer

12. The only environmental work carried out by the Institut français de recherche pour l’exploitation de la mer (IFREMER) since entering into contract with the Authority was the 2004 Nodinaut research cruise. The aims of the cruise were to establish baseline conditions in the contract area and to examine the recovery of benthic communities after disturbance. Samples were collected to compare the communities found in different nodule provinces and also to monitor the recovery of a mining track created in 1978. The results showed that the track was still clearly visible 26 years after it was created, but the biological communities within the track were indistinguishable from those adjacent to the track. Data were collected on the structure of the benthic communities along with information on environmental factors (geological, physical and chemical). IFREMER has presented a mainly descriptive summary of the results. According to the contractor, the data have been included in its “Biocean” database (see www.ifremer.fr/biocean), which can be accessed through the Census of Marine Life. IFREMER also includes participation in conferences and workshops as a component of its environmental work.

13. Although a total of €5.8 million has been spent by IFREMER, expenditure on environmental issues has not been identified, and the total includes a €3 million overhaul of the contractor’s research submersible.

VI. Interoceanmetal Joint Organization

14. The Interoceanmetal Joint Organization (IOM) carried out the disturbance phase of its benthic impact experiment in 1995 and commenced the monitoring phase in 1997. According to its 2001 annual report, IOM conducted its first research

cruise, a joint venture with Yuzhmorgeologyia, in 2000. IOM carried out another research cruise in 2004.

15. The contractor examined three zones situated within a square study area of approximately 1.5km x 1.5km: a control area outside the area of impact; an impacted area within the disturbed zone; and another area in the resedimentation area. Within each area, the contractor examined chemical and biological parameters of the water column and sediment and described the methodologies used. Data have been presented descriptively, supplemented by some tables and graphs. The majority of the environmental work carried out by IOM concerned the chemical and physical characteristics of the sediment and the annual reports included raw data on these parameters.

16. Biological investigations have been made primarily through the analysis of photographic images, including comparisons between megafaunal communities found in nodule-free and nodule-rich areas. IOM has also been collating existing data to create environmental databases but has not provided much detail on these.

17. According to its annual reports, IOM has spent $638,344 on environmental investigations since 2001.

VII. Government of the Republic of Korea

18. Since 2001, the Government of the Republic of Korea has carried out two research cruises to its contactor area each year. Of these, eight have specifically focused on environmental issues. During these cruises the contractor has measured the chemical, physical and biological characteristics of the water column, biological and sediment characteristics of the seabed and meteorological conditions. All reports contain information regarding the location of samples collected, the methods used and a description of the results obtained, along with graphical, and in some cases tabulated, data.

19. Of particular note is that the Government of the Republic of Korea, since receiving the request sent by the Secretary-General to all contractors, has been providing its biological data in the requested format to aid inclusion in an environmental database of the whole Clarion-Clipperton Fracture Zone that is being prepared by the secretariat. It is the only contractor providing the data in the specific format requested.

20. The environmental data collected have been used to address natural variability both in time and space. Any changes in the environment after mining activity will be compared to the natural variability, so that changes as a result of anthropogenic impact can be identified.

21. According to its annual reports, the Government of the Republic of Korea has since 2001 made expenditure on environmental investigations including “geological, geophysical and environmental study” and “sample analysis” amounting to $15 million and $8.9 million respectively.

VIII. Yuzhmorgeologyia

22. In 2000, Yuzhmorgeologyia completed the final cruise related to its benthic impact experiment, which was designed to determine how the environment recovered from a previously created mining-related impact. A summary of the samples collected and an overview of the environmental conditions were presented. The contractor stated that seven years after the disturbance the environment was still recovering and had not returned to pre-disturbance levels.

23. In addition, Yuzhmorgeologyia has carried out a series of exploration cruises to characterize its contract area, during which environmental samples have been collected. These samples have included geo-acoustic profiling, photographic transects, sediment collection and recording of meteorological conditions. Yuzhmorgeologyia describes the techniques used and presents a description of each taxonomic group encountered. Information is generally presented in the form of descriptions and photographs, with tables summarizing the results and some graphical analysis.

24. Yuzhmorgeologyia notes in its reports that an environmental database has been created containing data on environmental studies, including biological and meteorological investigations, but no specific details on it are provided.

25. Its reports state that in 2006 and 2007, $14.9 million was spent on exploration and research activities, including environmental work. In the financial statements contained in other annual reports, the environmental activities were listed separately and cost a total of $2.5 million.

IX. Key findings from initial review

26. Research by many contractors revealed significant temporal and spatial variation in the natural environment, which could complicate the evaluation of any anthropogenic impacts if sufficient baseline data are not collected prior to mining activity. In addition, studies examining environmental recovery after disturbance appear to show that recovery rates are slow, and no cases revealed an impacted site returning to pre-disturbance conditions for all parameters.

27. In total, contractors state that almost $38 million has been spent on environmental work. In addition, some financial statements did not separate environmental work from other activities, with more than $140 million being listed as expenditure that included environmental studies. It can be seen that a great deal of work has been carried out by contractors, but the lack of collaboration or common methods of presentation has made it impossible to interpret the results on a regional scale.

28. It would be useful to investigate the possibility of a strategic plan for the next stage of environmental studies, in order to enable a regional baseline environmental evaluation of the areas of mining interest. This plan could include recommendations regarding collaboration, standardization of reporting, provision of raw data and an investigation into the compatibility of the results obtained by each contractor to date.