



Council

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12 July 2024

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Twenty-ninth session

Council session, Part 2

Kingston, 15 - 26 July 2024

Agenda item 9

**Consideration, with a view to approval, of application
for a plan of work for exploration, if any**

Report and recommendations of the Legal and Technical Commission to the Council of the International Seabed Authority relating to an application for approval of a plan of work for exploration for polymetallic sulphides by Earth System Science Organisation (ESSO)-Ministry of Earth Sciences, Government of India

I. Introduction

1. On 18 January 2024, the Secretary-General of the International Seabed Authority received an application for the approval of a plan of work for exploration for polymetallic sulphides along the Carlsberg ridge of the Indian Ocean. The application was submitted, pursuant to the regulations on prospecting and exploration for polymetallic sulphides in the Area (ISBA/16/A/12/Rev.1, annex) (“the Regulations”), by Earth System Science Organisation (ESSO) – Ministry of Earth Sciences, Government of India.
2. On 18 January 2024 in accordance with regulation 22, paragraph (c), the Secretary-General notified the members of the Authority of the receipt of the application and circulated information of a general nature concerning the application. On the same date, the Secretary-General also notified the members of the Legal and Technical Commission and placed consideration of the application on the agenda of the Commission for discussion during the first part of its twenty-ninth session, to be held from 4 to 15 March 2024.

II. Methodology and consideration of the application by the Legal and Technical Commission

A. General methodology applied by the Commission in consideration of the application

3. In its consideration of the application, the Commission noted that, in keeping with the provisions of article 6 of annex III to the United Nations Convention on the Law of the Sea, and paragraph 3 of regulation 23, it was first required to make an objective determination as to whether the applicant had fulfilled the requirements contained in the regulations, in particular with respect to the form of the application; whether the applicant had given the undertakings and assurances specified in regulation 15; possessed the financial and technical capabilities to carry out the proposed plan of work for exploration and had provided details as to its ability to comply promptly with emergency orders; and, as relevant, had satisfactorily discharged its obligations in relation to any previous contract with the Authority. The Commission was then required to determine, in accordance with regulation 23, paragraph 4, and its procedures, whether the proposed plan of work would provide for effective protection of human health and safety and effective protection and preservation of the marine environment, and ensure that installations would not be established where interference might be caused to the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity. In its paragraph 5, regulation 23 also provides that, if the Commission makes the determinations specified in its paragraph 3 and determines that the proposed plan of work for exploration meets the requirements of its paragraph 4, the Commission shall recommend approval of the plan of work for exploration to the Council.
4. In considering the proposed plan of work for exploration for polymetallic sulphides, the Commission took into account the principles, policies and objectives relating to activities in the Area, as provided for in Part XI of annex III to the Convention and in the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982.

B. Consideration of the application

5. The Commission considered the application during the first and second parts of the twenty-ninth session on 5, 6 March, and 3,4,10 and 11 July 2024. It evaluated the application in accordance with the procedure contained in document ISBA/18/LTC/8/Rev.1.
6. On 5 March 2024, the Commission invited the applicant to make a presentation on the application. Members of the Commission then asked questions to obtain clarification on certain aspects of the application. The Commission evaluated the legal, financial, geological, technological, environmental and training aspects of the application.
7. On 7 March 2024, the Commission sent a set of written comments and questions to the applicant. Written responses were sent to the Commission by the applicants on 24 May 2024. The Commission considered those responses on 2, 3 and 4 July and sent a further list of questions to the applicants on 6 July 2024. On 10 July 2024, the Commission received responses to the questions from the applicant and reviewed them.

III. Summary of basic information regarding the application

A. Identification of the applicant

8. Name of applicant: Earth System Science Organisation (ESSO) – Ministry of Earth Sciences, Government of India
9. Address of the applicant:
 - (a) Street address: Ministry of Earth Sciences, Prithvi Bhavan, Lodi Road, New Delhi-110003, India;
 - (b) Postal address: same as above;
 - (c) Telephone number: +91-11-24629771/ 24629772;
 - (d) Fax number: +91-11-24629777
10. Email address: secretary@moes.gov.in
11. Name of applicant's designated representative: Dr. M. Ravichandran
 - (b) Street address: same as above;
 - (c) Postal address: same as above;
 - (d) Telephone number: same as above;
 - (e) Fax number: same as above;
 - (f) Email address: same as above.
12. As a juridical person, the applicant's details are:
 - (a) Place of registration: Not Applicable
 - (b) Principal place of business/domicile: Not Applicable.

B. Sponsorship

13. The sponsoring State is India.
14. The date of deposit by India of its instrument of ratification of the United Nations Convention on the Law of the Sea ('the Convention') and consent to be bound by the Agreement relating to the implementation of Part XI of the Convention is 29 June 1995.

C. Area of application

15. The total application area covers 10,000km², located in the Central Indian Ocean and consists of 100 blocks, each of 10km by 10km, with none exceeding 100km² in area. These blocks are organized and grouped into 11 Clusters, each containing from 5 to 18 blocks. The application area covering the 11 clusters is enveloped within a rectangular area not exceeding 300,000km² in size where the longest side does not exceed 1,000km in length. The coordinates and general location of the area under application are shown in the annexes to the present document.

16. A breakdown of the clusters and the number of blocks contained in each cluster is as follows: Cluster A – 18 blocks; Cluster B –15 blocks; Cluster C – 8 blocks; Cluster D – 7 blocks; Cluster E – 16 blocks; Cluster F – 5 blocks; Cluster G – 5 blocks; Cluster H – 6 blocks; Cluster I – 5 blocks; Cluster J – 7 blocks; and Cluster K – 8 blocks.
17. The application area is a part of the Area and lies beyond the limits of the national jurisdiction of any State.
18. The Commission notes that the area of the application does not overlap with existing contract areas.
19. The Commission also notes that the applicant will ensure that it will not establish any installations where interference may be caused to the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity.

D. Other information

20. The applicant provided the written undertakings signed by its designated representative, in compliance with regulation 15 of the Regulations.
21. The applicant elected to offer an equity interest in a joint venture arrangement with the Enterprise, in accordance with regulation 19 of the Regulations.
22. The applicant paid a fee of \$500,000, in accordance with regulation 21, paragraph 1 of the Regulations.

IV. Examination of information and technical data submitted by the applicant

23. The following technical documents and information were submitted by the applicant:
 - (a) Information relating to the area under application:
 - (i) Charts of the location of the blocks;
 - (ii) A list of the coordinates of the corners of blocks under application, in accordance with the World Geodetic System 1984;
 - (b) Information to enable the Council to determine whether the applicant is financially capable of carrying out the proposed plan of work for exploration;
 - (c) Information to enable the Council to determine whether the applicant is technically capable of carrying out the proposed plan of work for exploration;
 - (e) A plan of work for exploration;
 - (f) Information relating to training;
 - (g) Written undertakings by the applicant;

V. Consideration of financial and technical qualifications of the applicant

A. Financial capability

24. The applicant submitted a statement by the Government of India and signed by its designated representative, certifying that the applicant has the necessary financial resources to meet the estimated costs of the proposed plan of work for exploration, and to fulfil its financial obligation to the Authority in accordance with regulation 13, paragraph 3 of the Regulations.

B. Technical capability

25. In evaluating the technical capability of the applicant, the Commission took note of information provided by the applicant in relation to its marine expertise over the last forty years including implementation of extensive marine exploration programmes, deep ocean research, environmental research, exploration of marine mineral resources and technology development. In addition, the applicant provided a description of key activities undertaken in deep-sea related surveys, exploration, scientific and environmental studies. The applicant further provided details of its technical capabilities and achievements under its two contracts with the ISA. The first contract was signed in 2002 for the exploration of Polymetallic nodules in the Central Indian Ocean Basin. The second contract was signed in 2016 for the exploration of Polymetallic sulphides in the Central Indian and Southwest Indian Ridges. The nodal agencies are the National Centre for Polar and Ocean Research (NCPOR), Ministry of Earth Sciences, Government of India, and the National Institute of Ocean Technology (NIOT), Ministry of Earth Sciences, Government of India, respectively.

1. General description of equipment and methods

26. The applicant provided information regarding the planned operation to carry out the proposed plan of work for exploration, as well as the methods and instruments to be used for that purpose, including a detailed list of equipment to be used for the first five-year programme of activities. The applicant informed that it would use such equipment as:
- (a) Three fully equipped vessels owned by India; *ORV Sagar Kanya*, *R/V Sagar Nidhi* and *R/V Sindhu Sadhana*. In addition, applicant plans to procure an additional high-sea vessel equipped with state-of-the-art facilities to supplement the survey and exploration efforts for the polymetallic sulphide in the proposed exploration area.
 - (b) Multibeam echo-sounder: for conducting bathymetric surveys of the seabed in the area of exploration.
 - (c) Bottom/Sub-bottom profiler system (without use of explosives): the acoustic data are to be used to study the thickness and physical characteristics of subsurface sediment.

- (d) CTD/clean CTD with water sampler for determining essential physical properties of the sea water.
 - (e) Miniature Autonomous Plume Recorder (MAPR): to collect hydrothermal plume data (suspended particle concentrations). MAPRs target operations where hydrothermal plume data are not normally collected: rock cores, dredges, or deep-towed geophysical and bottom imaging.
 - (f) Grab/Corers: for rock/sediment sampling to study the mineralisation process, benthic and microbial fauna.
 - (g) Remotely operated vehicle (ROV): equipped with multifunctional tools sensors, camera/video systems, which transfer video images via fibre-optic cable onto the vessel. The ROV is planned for image data collection, ground truthing, for precise small-scale sampling, and in particular, for direct sampling of hydrothermal fluids at active black smoker chimneys in the exploration area. Used in vent habitats and for sampling in sensitive environments.
 - (h) Autonomous underwater vehicle (AUV): a self-propelled, unmanned, untethered underwater vehicle with multiple sensors for near seabed geophysical surveys in vent habitats and seafloor imaging in large areas. Used at approximately 6-8m above the seafloor.
 - (i) On-board laboratory facilities: for biological and geological processing, with specialized equipment and modern facilities optimized for dealing with polymetallic sulphides and deep-sea biology, and box-core samplers for efficient handling, documentation and preservation of the samples acquired;
 - (j) TV-guided Grab systems: for precise large-scale (up to about 3 tonnes) sampling of rocks, sediment or massive sulphides. Due to a high-resolution video camera and several lights mounted in the centre of the grab, the system can be used for small-scale mapping of the seafloor as well as for sample selection; on seamounts/ridges. Used for quantitative benthic biodiversity studies. Used to verify photographic data acquired during regular environmental surveys.
 - (k) Acoustic Doppler Current Profiler (ADCP): to measure high resolution water currents with sound using the principle of Doppler effect.
 - (l) Magnetometer: to detect variations in the total magnetic field of the underlying seafloor
 - (m) Sea Floor Observation Systems (SFOS) for video/ still photographic observations of the sea floor, as close as possible or at an altitude of less than 8m, depending on terrain feasibility. Used for habitat imaging in small areas.
 - (n) Benthic sledge: camera-mounted sledges for sample collection on the seafloor, avoiding sensitive areas and reducing dragging time.
 - (o) Dynamic Positioning System: for accurate navigation positioning.
 - (p) Dredges: for seabed sampling, avoiding sensitive zones.
27. The applicant noted that a new research vessel dedicated exclusively to the investigation of deep-sea minerals is currently under construction and will be commissioned in the next few years.

2. Financial and technical capabilities to respond to any incident or activity that causes serious harm to the marine environment

28. The applicant provided information related to its expertise and technical capabilities developed over the last four (4) decades in a variety of marine survey, exploration and environmental studies/campaigns. In particular, it provided information on major activities it has conducted in the deep ocean including exploration of polymetallic massive sulphides and polymetallic nodules, the prospecting of cobalt-rich ferromanganese crusts, studies in the Southern Indian Ocean, the delineation of outer limits of India's Continental Shelf and the mapping of its Exclusive Economic Zone.
29. The applicant indicated that the implementation of these programmes required extensive planning and precautions for the marine related surveys, research and technology development activities. Therefore, these activities have provided experience in anticipating, responding as well as monitoring any harmful effects on the marine environment as a result of deep-sea survey, exploration and research activities.
30. The applicant stated that the plan of work will have a precautionary mechanism in place for anticipating as well as responding to any incident that may have potential to cause serious harm to the marine environment.
31. The Government of India through Earth System Science Organisation (ESSO)-Ministry of Earth Sciences, the Applicant, has confirmed making available the necessary funds required for implementation of the proposed plan of work. The estimated funds requirement has an element of contingency that accounts for responding to unforeseen incidents/activities that may result during the proposed research and exploration activities.

VI. Consideration of data and information submitted for approval of the plan of work for exploration

32. In accordance with regulation 20 of the Regulations, the applicant submitted the following information, with a view to receiving approval of the plan of work for exploration:
 - (a) A general description and schedule of the proposed exploration programme, including the programme of activities for the immediate five-year period, such as studies to be undertaken in respect of the environmental, technical, economic and other appropriate factors that must be taken into account in exploration;
 - (b) A description of the programme for oceanographic and environmental baseline studies in accordance with the regulations and any environmental rules, regulations and procedures established by the Authority that would enable an assessment of the potential environmental impact, including, but not restricted to, the impact on biodiversity of the proposed exploration activities, taking into account the Recommendations issued by the Commission (ISBA/25/LTC/6/Rev.3);
 - (c) A preliminary assessment of the possible impact of the proposed exploration activities on the marine environment;

- (d) A description of proposed measures for the prevention, reduction and control of pollution and other hazards, as well as possible impacts, to the marine environment;
 - (e) Data necessary for the Council to make the determination required under regulation 13, paragraph 1 of the Regulations;
 - (f) A schedule of expected yearly expenditure in respect of the programme of activities for the first five-year period.
33. In response to questions, the applicant informed the Commission that it would consider the development of mining technology at the final phase of the implementation of the plan of work and produce a roadmap of its proposed mining technology. The applicant indicated that the exploration activities will identify the presence or absence of submarine structures, shipping lanes, zones relating to fisheries and exclusion zones. The applicant agreed to study the impacts of its exploration activities on fisheries. The applicant also committed to carry out environmental monitoring in the area and take into account sites of ecological sensitivity in its environmental baseline plan.
34. At the request of the Commission, the applicant submitted further information on the location of submarine cables, navigation routes and fisheries operations in the proposed area. .
35. The applicant presented a map showing the Oman Australia submarine cable (OAC) that runs through cluster J of the proposed area and noted that sufficient distance will be maintained between the cable and sampling in the proposed area to avoid risk of damage to the cable or sampling gear. The applicant assured that sampling activities will be planned and managed considering the level and period of shipping along the shipping route identified directly along the mid-line of the applicant's proposed area. Further, the applicant indicated that exploration activities will be managed to avoid interference with fishing activities in the proposed area.

VII. Training

36. The Commission noted that the applicant proposed training programme for the first five years of the contract period. The applicant indicated that detailed training plans for the second and third phases of the contract will be developed at an appropriate time in consultation with the Authority.
37. The Commission also noted that the applicant's proposed training programme for the first five years included at-sea and on-land training opportunities. The applicant provided detailed information on the objectives and content of the training programme for the first five-year period, including the general qualifications of candidates.
38. The applicant indicated that The National Centre for Polar and Ocean Research (NCPOR) shall be the coordinator for conducting the training program on its behalf. The training programme will be organised in association with various National Institutes namely: Centre for Marine Living Resources & Ecology (CMLRE), Cochin, Indian National Centre for Ocean Information Services (INCOIS),

Hyderabad, National Centre for Earth Science Studies (NCESS), Thiruvananthapuram, National Institute of Ocean Technology (NIOT), Chennai, CSIR-National Institute of Oceanography (NIO), Goa.

39. The schedule of the first 5-years training programme includes two slots for 10 candidates. The first group of five trainees will undergo land-based training in institutes and laboratories in the second year of the contract and the second group of five trainees will get sea-based training in the fourth year of the contract.

VIII. Conclusion and recommendations

40. Having examined the particulars submitted by the applicant, as summarized in sections III to VII above, the Commission is satisfied that the application has been duly submitted in accordance with the regulations and that the applicant is a qualified applicant within the meaning of annex III, article 4, to the Convention.
41. The Commission is also satisfied that the applicant:
- (a) Has complied with the provisions of the Regulations;
 - (b) Has given the undertakings and assurances specified in regulation 15 of the Regulations;
 - (c) Possesses the financial and technical capabilities to carry out the proposed plan of work for exploration.
42. The Commission is further satisfied that none of the conditions in regulation 23, paragraph 6, apply.
43. The Commission is satisfied that the proposed plan of work for exploration will:
- (a) Provide for effective protection of human health and safety;
 - (b) Provide for effective protection and preservation of the marine environment, including, but not restricted to, the impact on biodiversity;
 - (c) Ensure that installations are not established where interference may be caused to the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity.
44. Accordingly, pursuant to paragraph 5 of regulation 23, the Commission recommends to the Council approval of the plan of work for exploration for polymetallic sulphides submitted by ESSO, Ministry of Earth Sciences, Government of India.

Annex I

Geographical coordinates of the area under application

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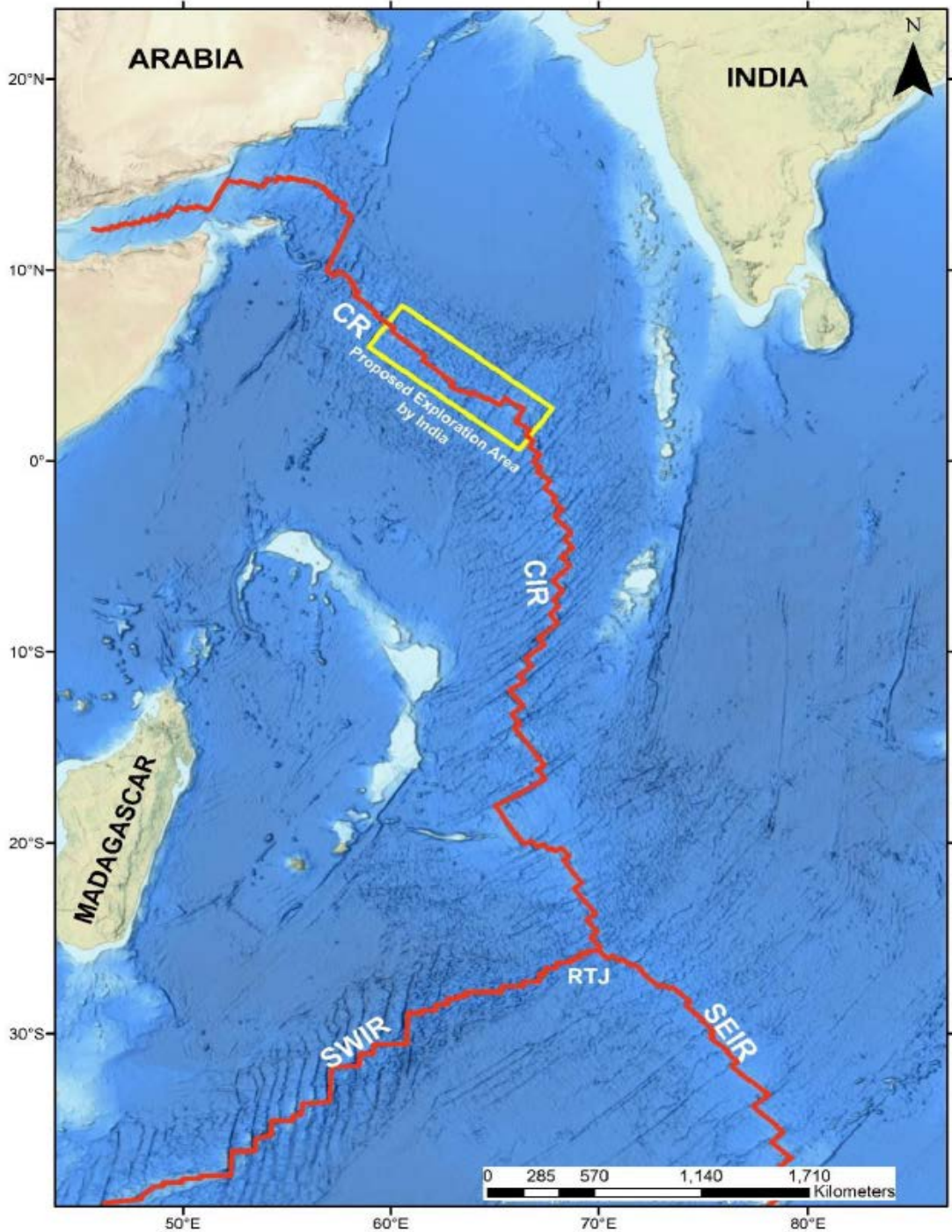
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Annex II

Map showing the location of the area under application (rectangular area of 300,000 km² where the longest side does not exceed 1,000 kilometres in length)



Key

- CR: Carlsberg Ridge
- CIR: Central Indian Ocean Ridge
- SWIR: Southwest Indian Ridge
- SEIR: Southeast Indian Ridge

 Location of the area under application

Map of the area under application showing the location of Clusters and Blocks in a rectangular area of 300,000km² enveloping 11 clusters and 100 blocks

